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The Milroy Lectures
ON
INDUSTRIAL ANTHRAX.

Delivered before the Royal College of Physicians of London on March 7th, 9th, and 14th, 1905.

By T. M. LEGGE, M.D. Oxon., D.P.H. Cantab.,
HIS MAJESTY'S MEDICAL INSPECTOR OF FACTORIES.

LECTURE II.[1]

Delivered on March 9th.

MR. PRESIDENT AND GENTLEMEN,—The treatment of anthrax has been conducted on three lines. The first is based on the fact that man is naturally possessed of a considerable degree of resistance to the disease, as spontaneous recovery from external anthrax is not infrequent. Treatment has, therefore, been conducted on expectant lines only. Secondly, and by far the commonest method, is removal or destruction of the pustule in the belief that the process is at first a local one, the bacilli developing at the seat of infection and only after lapse of time causing serious and it may be fatal effects either by intoxication or by a more widespread distribution of bacilli in the body. I include under this head such methods as excision, cauterisation, and injection into the tissues round the pustule of 5 per cent. carbolic acid, as they all have for their object either the direct destruction of the bacilli or the setting up of a barrier against further extension outwards from the central nidus. Thirdly, following on the successful results obtained in the treatment of certain infective diseases by inoculation with the serum of immunised animals, similar success has been claimed in the case of external anthrax also and, in Italy and South America notably, this method of treatment is coming more and more into practice. The fact that external anthrax is so frequently the subject of spontaneous recovery makes it difficult to compare the respective merits of one and another method of treatment when the only criterion taken is the proportion of deaths to the number attacked. But in the case of external anthrax there are other means of comparison which do not obtain equally in other diseases when this the chief is left out of account, namely—(1) the relative amount of scarring or of deformity left; (2) the applicability of the form of treatment to the differing types assumed by the disease and the stage which it may have reached; and (3) the length of time which elapses from the beginning of the treatment to resumption of employment. All these are fundamentally important in judging of efficacy and the third especially is of moment where industrial considerations enter.

Müller[2] bases a series of articles on the success attending 13 consecutive cases treated intentionally in Jena by the most conservative of methods—namely, rest, fixation, and elevation of the part affected, stimulating diet, and the local application of grey ointment. Ramstedt[3] from the same hospital more recently has adduced other seven consecutive cases (one a very severe one of anthrax of the tongue) in which nothing but the same expectant treatment was pursued. And, similarly, Fr. Schultze[4] of Bonn cites also a case of extremely severe malignant pustule of the cheek with extensive œdema of the eyelid, neck, and chest, so extensive as to suggest the gravest prognosis, which recovered (after a plastic operation on the eyelid) without operative treatment on account of the situation of the pustule. Müller's view is that the bacilli multiply slowly at the point of inoculation and that the œdema set up is due to toxins liberated by them. In itself this œdema up to a certain point is to be regarded as a healing process in that it is injurious to the existence of the bacilli already present and is unfavourable to their further development. The fact that bacilli are very rarely found in the blood and then only within a very short period prior to death shows, he thinks, that the blood is not readily infected. Unless the blood-vessels, therefore, are cut through the bacilli will not enter the blood stream except by the devious path of the lymphatic vessels and in the lymphatic glands the bacilli meet with obstruction and are held back. He assumes that generalisation of the infective organisms can only occur after the cells at the point of local infection have been weakened either by actual struggle with the bacilli or by the action of toxins and effort therefore should be directed to maintain the cells at the point of entry in such a state as to prevent best the further spread of the bacilli. Hence the reason for the conservative treatment. It is possible to deal with 11 of the 13 cases he describes, the data in two being insufficient for the purpose. Several were, he says, extremely severe but in all the temperature had sunk to normal and the œdema had considerably diminished within a few days of the date of commencing treatment. The duration of treatment varied from three to 45 days (so long a period in one case being necessary on account of necrosis of both upper and lower eyelids), the average duration being 16 days. But in seven of the 11 it is definitely stated that further attendance in the out-patient department was necessary—in one case for considerable loss of the skin of the arm. He regards as almost a crucial experiment the occurrence of death in the fourteenth case where incisions had been made into a malignant pustule which up to then had been doing well, with the result that after 12 hours the inflammation had extended widely and death ensued in 55 hours. The cases are too few to draw the sweeping conclusion Müller does but they are instructive in emphasising the difficulty in sifting the evidence of different methods of treatment. His view that obstacle is placed in the way of generalisation of anthrax by the lymphatic glands is supported by the experiments of Wyssokowitch[5] who found in one case of anthracæmia in man that he could cultivate 52 colonies of anthrax bacilli from a drop of blood from the finger, but similar cultivations from the vesicles, superficial and deep portions of the excised pustule, remained sterile. Following this observation up by injection of bacilli into rabbits in the region of the foot and watching the length of time which elapsed before the different glands and the blood became infected he concluded that the bacilli passed from the primary centre in the subcutaneous tissue into the blood chiefly through the lymph glands, which act as stations and hold up the bacilli until these grow through the glands and pass into the efferent lymph vessels. But seeing that as a consequence of the necrotic process many small veins must become thrombosed and be the seat of development of bacilli Müller gives no sufficient reason why these bacilli should not become detached and pass into the blood stream as readily as they would do were the blood-vessels cut through.

In the first lecture I showed that the mortality of the disease generally was at least 25 per cent. For cases treated under favourable conditions this figure is too high and by this is to be understood primarily excision not later than the fourth day after the initial symptoms have shown themselves. Unless the persons affected have knowledge of the nature of the disease or apply for treatment to a hospital the absence of pain and of constitutional disturbance often causes the lesion to be unheeded. That the general high death-rate is due to ignorance of the symptoms and neglect in applying for early treatment is shown, I think, by study of hospital records in districts where the disease is well recognised. Thus in the hide and skin warehouses round Tooley-street the symptoms are known and patients apply usually in good time at Guy's Hospital. Of 56 cases of malignant pustule treated there between 1896 and 1904 four were fatal—7·1 per cent. Of 20 treated at St. Bartholomew's Hospital two were fatal, and of 39 treated between 1896 and 1904 in the Bradford Royal Infirmary there were six deaths, 15·4 per cent. Study of these records leaves no doubt on the mind that in early cases, and frequently also in advanced, as soon as the local centre of infection has been removed or destroyed there is usually a rapid fall in temperature, the œdema commences to disappear and menace to life is over, although several days may elapse before all glandular swelling has subsided. Fatal cases are those in which excision is practised late and in which the symptoms are already severe on admission. This statement must be regarded as a general one only, because examination of the notes on 64 cases

[1] Lecture I. was published in THE LANCET of March 18th, p. 689.
[2] Deutsche Medicinische Wochenschrift, vol. xx., 1894, pp. 515, 535, 688, 706, 916, 955, 977.
[3] Münchener Medicinische Wochenschrift, vol. xlvi., 1899, p. 517.
[4] Deutsche Medicinische Wochenschrift, vol. xl., 1901.
[5] Reference in Centralblatt für Chirurgie, 1892, p. 6.

treated in St. Bartholomew's Hospital and Guy's Hospital shows that in ten œdema increased after excision and in a small number of the deaths in London hospitals generalisation of the disease followed so quickly after excision as to raise suspicion that they were connected. Surgical interference in external anthrax usually takes the form of free excision, dissecting out the pustule from the healthy tissues beneath, swabbing the wound out with pure carbolic acid, and allowing the wound to granulate up from the bottom. Frequently, also, or in substitution altogether of excision, into the subcutaneous tissue around the margins of the malignant pustule 5 per cent. carbolic acid is injected. At Guy's Hospital, based on the experience of Davies-Colley,[6] which again was based on that of Muskett in South Africa, in addition to excision powdered ipecacuanha is dusted on the wound and ipecacuanha in ten-grain does is given internally. Muskett[7] himself in 15 years treated 50 cases without fatal issue, using locally ipecacuanha mixed with water to the extent of a cream and did not practise excision. He believed the remedy was as much a specific for anthrax as quinine is for ague and mercury for syphilis. Davies-Colley did not feel justified in omitting excision and believed that internal administration of ipecacuanha was useful in acting specifically on the small black sloughs not infrequently found in the intestinal tract in fatal cases, the cause probably of the vomiting so frequently complained of. Washbourn found, too, that ipecacuanha has the power of destroying bacilli but not the spores of anthrax and in the body sporulation does not take place. Muskett cites only four of his 50 cases, all of them affecting the forearm, hand, or finger. The treatment initiated by Davies-Colley is still that carried out most frequently at Guy's Hospital. Russian surgeons[8] appear to have used largely injections of carbolic acid round the pustule. Scharnowski has treated in this manner 50 cases with 2 per cent. of deaths and their severity may be judged from the fact that 25 affected the face and neck. Cases are recorded where very large amounts of carbolic acid have been injected in cases of anthrax when the œdema has been extending without production of symptoms of carboluria. Such a case is reported in the *Guy's Hospital Gazette* of Oct. 8th, 1904. Country practitioners make frequent use of the caustic potash stick alone. Graef[9] describes 384 cases of malignant pustule treated thus by himself and two other physicians since 1856 with 20 deaths—5 per cent. Of his own 75 cases four were fatal and ten were eventually cured after more or less local necrosis (in one case amputation of the arm). In the remaining 61 within 24 hours of the cauterisation the symptoms diminished and the threatening anthrax pustule was converted into a harmless eschar. The situation in these was about equally distributed on the face and neck, on the one hand, and the upper extremity on the other. The eschar commenced to detach itself in from ten to 14 days and became finally detached in the third or fourth week. In the neighbourhood of the eye sometimes plastic operation was necessary. Failure by this method he attributes to delay in application for treatment. He considers that the favourable result of the expectant treatment as shown by Müller does not justify the omission of destruction of the local centre, as he believes by that means the generalisation of the disease can be prevented. Excision as a preliminary to the use of caustics is allowable but, in his opinion, quite unnecessary.

The great objection, however, to be urged against excision is that in some situations—as, for instance, on the eyelids—operative treatment is impracticable or, if practised, must inevitably lead to disfigurement and necessitate subsequent plastic operation or skin-grafting to repair the loss of tissue caused; indeed, it may be said that subsequent treatment of external anthrax after excision is more concerned with remedying the conditions thus produced than by concern for the disease itself. Further, there is the objection that in a few cases it may lead to generalisation. Examination shows that of 15 cases treated by excision at St. Bartholomew's Hospital the average stay in hospital was 20 days and that in not one is it stated the wound was quite healed at the time of discharge. Similarly in Guy's Hospital of 43 cases the average duration of treatment was 15·7 days; in the London Hospital of 38 cases, 16·1 days; and in the Bradford Royal Infirmary of 32 cases, 22·6 days. I draw no inference respecting the average duration of stay in one and another hospital, for this necessarily is dependent on the pressure there may be for beds, causing in some cases an earlier discharge to the out-patient department than in others.

In view of the importance of examining the method of treatment by anti-anthrax serum closely I have set down the details of all the published cases that I can find[10] without selection (see Table X.). All but two of the cases have been treated in Italy with Sclavo's serum. Those numbered 1 to 23 are consecutive cases treated by Dr. Lazzeretti[11] of Siena and 28 to 53 by Dr. Cicognani[12] of Santa Croce. Of the 67 cases 56 were treated by serum alone and in 11 this serum treatment was subsequent to other treatment which in ten cases had been excision or cauterisation or both. In 44 of the 56 treated with serum alone data are given precise enough for practical purposes to determine the time which elapsed from the commencement of treatment until complete recovery. In several instances it is the same as the time given for the separation of the eschar but many days before that stage has been reached the patient is to all intents and purposes quite well. Excluding the fatal cases, in every instance but one by the third day marked improvement, not only in the general symptoms but in arrest of the further development of the pustule and in diminution of the œdema, had taken place. Taking the time thus given or to be inferred in these 44 cases the average duration of treatment was eight days. In none was it more than 14 days. I can affirm, too, that in the 12 cases treated with serum alone in which the details are not precise enough to allow of the number of days being given the evidence all points to rapid healing, except in Nos. 24 and 33 where there was loss of tissue. The exact description, so far as it is given, of the final condition at the site of the pustule itself may be summarised as follows: No visible scar, 10; scar hardly visible, 5; slight scar, 10; completely recovered, 15; some loss of tissue in eyelid but function unimpaired, 1; and complete loss of the upper eyelid, 1; total, 42. The situation of the pustule in these cases is indication enough of their severity, the high proportion on the eyelid being especially noticeable. (Table XI.)

In the list are two fatal cases, Nos. 10 and 49. In the first the patient was the subject of malaria, was addicted to alcohol, and had had syphilis. The upper eyelid was affected with œdema extending rapidly over the face and chest and there was no necrotic patch to assist in the diagnosis. The condition was suspected to be diphtheria of the conjunctival mucous membrane and diphtheria antitoxin was injected. A day later some vesicles appeared on the eyebrow, on which date 20 cubic centimetres of the serum were administered. Improvement in the local and general conditions ensued shown by reduction in the œdema, subsidence of fever, and regained appetite. Four days later, improvement during that time having been continual, he was seized with a rigor, violent headache, vomiting, rise of temperature, and delirium, on which followed profound collapse, coma, and death. Post mortem there were found extensive submeningeal effusion and hæmorrhage in the substance of the brain. Anthrax bacilli were found in the submeningeal effusion. In the other case, also affecting the eyelid, serum treatment was delayed owing to the impossibility of obtaining it, so excision was practised. When the serum was obtained and injected intravenously immediate improvement took place. Two days later the œdema had diminished so much that the woman was able to see out of her eye, took her food well, and the pulse-rate dropped from 140 to 104. A few hours later she was seized with sudden collapse, cyanosis, and died. No post-mortem examination was held. Of the nine other cases treated with excision or cautery as well, in one there was complete necrosis of the upper and lower eyelid and in two others

[6] Guy's Hospital Reports, vol. xlvii., 1890, p. 1.
[7] THE LANCET, Feb. 11th, 1888, p. 269.
[8] Reference in Centralblatt für Chirurgie, 1882, 1890, and 1892.
[9] Wiener Klinische Rundschau, vol. x., 1903, p. 165.

[10] This was written before the cases in the Brit. Med. Jour. of Jan. 7th and Feb. 11th and in THE LANCET of Feb. 4th were published.
[11] Lazzeretti: Ventitre Casi di Pustola Maligna curati col Siero Anticarbonchioso Sclavo, Siena, 1902.
[12] Cicognani: Quattordici Casi di Pustola Maligna curati e guariti col Siero del Professore Sclavo (Gazzetta degli Ospedali e delle Cliniche, No. 14, 1901). Ibid., Pustola Maligna e Siero Anticarbonchioso Sclavo (Gazzetta Medica Italiana, Nos. 51-52, 1902). Garzia: La Sieroterapia Anticarbonchiosa, Quattro Nuove Osservazioni Cliniche (Rivista d'Igiene, 1904). For further literature, see Sclavo, Sullo Stato presente della Sieroterapia Anticarbonchiosa (Rivista d'Igiene, anno xiv., 19[illegible]).

it is stated that after four days' treatment the local injury was the only concern, although one was of such exceptional gravity as to have received 200 cubic centimetres of the serum intravenously within 24 hours. In another case in which the bacilli were found in the blood and urine 190 cubic centimetres were administered in the course of seven days.

Particulars are given as to the amount of serum injected in each case. In the early days of the treatment the doses were comparatively small, no more than 20 or 30 cubic centimetres being given at the initial injection. In later cases the initial dose is generally 40 cubic centimetres and those who have experience of the treatment strongly advocate big initial doses. In 39 of the cases the initial dose sufficed. These cases, however, by no means exhaust the list of those in which serum treatment has been adopted. Sclavo[13] himself in 1903 reviewed the subject in a paper in which he tabulated all the cases known to have been treated by means of it in Italy whatever the stage of the disease. These totalled 164 with ten deaths—6·09 per cent. as compared with 24·1 per cent. for the whole of Italy. The facts stated by him he believes are very far from showing accurately the therapeutic value of the anti-anthrax serum. In the early days of a new treatment holding out a possible hope there is always temptation to use it in the most desperate cases. To two of the fatal cases I have referred already. In another, affecting the upper eyelid, the disease was not diagnosed until too late when the woman presented herself with a high temperature, very weak intermittent pulse, difficulty of respiration, and œdema of the face, the neck, and the chest. Death took place within nine hours of commencing treatment. In the fourth the pustule was situated on the neck with marked cyanosis from dyspnœa caused by the œdema. 25 cubic centimetres were injected with little hope of benefit and death followed within 20 hours. In the fifth the pustule was situated on the neck with œdema of the greater part of the thorax. Death took place within 11 hours of admission. 20 cubic centimetres only were injected. In the sixth no record was kept except that death took place within 30 hours of admission. In the seventh the pustule was on the neck with œdema rapidly extending to the thorax. Bacilli were found in the blood. There appears to have been no reaction to injection of 45 cubic centimetres on the first day and 30 cubic centimetres on the second. Of the eighth, particulars are not given except that the patient was admitted to the hospital in a serious condition, the victim of alcoholism and suffering from disease of the heart. The ninth had œdema of the neck and chest, and 20 cubic centimetres were injected. On the following day there was marked improvement. 20 cubic centimetres were again injected but death occurred suddenly on the morning of the next day with symptoms of hemiplegia.

Since July, 1904, serum treatment has been tried in England either alone or in connexion with excision in 12 cases of external anthrax. In one case of so-called malignant anthrax œdema also on the tenth day after the initial symptoms and when the patient was in a comatose condition 30 cubic centimetres were injected subcutaneously four hours before death at a time when bacilli were found present in the blood. In four of the 12 cases of external anthrax serum treatment alone without excision was adopted. The situation of the pustule in these cases was: (1) the malar eminence of the cheek; (2) the forehead; (3) the upper eyelid; and (4) the forearm. Cases 1 and 2 were treated at St. Bartholomew's Hospital.[14] An initial dose of 40 cubic centimetres sufficed in both cases to arrest further "development of vesicles or other indications of the necrotic process." There was increased œdema but this was associated with improvement in all other respects. In one of the cases no colonies of anthrax could be cultivated 19 hours after the serum had been injected although previously the fluid of the vesicles yielded abundant colonies. "Cultures were repeated on the third day again with negative result ..... only a few disintegrating bacilli were found, mostly enclosed in leucocytes." In both cases hardly any scar was left. Case 3 was treated by Dr. W. Mitchell of Bradford. The patient was a mill worker. Already by the second day both eyelids were closed with œdema, which extended to the clavicle on the left side, and the right upper and lower eyelids were dark coloured and appeared as if about to necrose. In four days 100 cubic centimetres were injected, 20 on the first, 50 on the second, 30 on the third, and ten on the fourth. By the fifth day the œdema had almost all disappeared except such as would readily be accounted for by the presence of a necrotic area on the left upper and lower eyelids. Although the local symptoms here were very severe the general condition of the patient remained good. Case 4 was treated at the Royal Infirmary, Bradford. The type of the disease was described as very malignant, with œdema rapidly extending to the shoulder. The patient received 140 cubic centimetres in the course of three days (30 cubic centimetres intravenously on the morning of the day of death). There appeared to be reaction at first in rise of temperature to 103·6° F. but the œdema continued to spread; he became insensible and the diagnosis of meningeal hæmorrhage between the pia mater and arachnoid was made by Dr. J. H. Bell. Post mortem the brain was found to be surrounded with blood between the pia mater and arachnoid and nowhere else.

Six of the eight cases in which excision was practised as well as serum administered (treated in Guy's Hospital, Bradford Infirmary, Kidderminster Infirmary,[15] and by Mr. E. G. Peck of Queensbury, Bradford) made rapid uninterrupted recovery. In the seventh, treated at the North Stafford Infirmary, excision of the pustule on the hand and incisions in the brawny œdema had been made on the twelfth day of the disease. Administration of serum was commenced 24 hours later when the patient was already in a comatose condition. Death took place 24 hours later, there having apparently been no reaction to the serum treatment (except in diminution of the œdema). In the eighth the pustule was situated on the neck with rapidly extending œdema. Two injections only of ten cubic centimetres at 12 hours interval were given. Death occurred within 30 hours of excision.

The claims which have been made as to the effect of serum treatment can be summarised by saying that: (1) even in very large doses it is innocuous; (2) it can be well borne even when introduced into the veins; (3) no case taken in an early stage or of moderate severity is fatal if treated with serum; (4) with the serum some cases are saved when the condition is most critical and prognosis almost hopeless; (5) when injected into the veins the serum quickly arrests the extension of the œdematous process so as to reduce notably the danger from suffocation which exists in many of the cases where the pustule is situated on the face or neck; (6) if used soon enough it reduces to a minimum the destruction of the tissues at the site of the pustule; (7) in some situations of the pustule, as the eyelid, serum treatment must be used in preference to any other as it alone can hold out hope of success without permanent injury; and to these may be added (8) that in internal anthrax it is the only treatment which holds out any hope of benefit. In almost all cases injection of the serum is followed by a rise in temperature often to over 105° F. and with it there is an improvement in the general condition of the patient. In the same way the necrotic process itself is to be regarded as a sign that the organism is making effort to resist the anthrax infection.

A few facts may emphasise the value and importance attached to the serum treatment in Italy. In Santa Croce,[16] a small town on the Arno of about 5000 inhabitants, are 36 tanneries employing 350 workers. Danger of anthrax is recognised as being practically limited to hides coming from the east and especially from China, so much so indeed that some manufacturers had ceased to use them. Anthrax among the workers had been frequent, of which the series of cases 28–53 in four years is sufficient evidence. Dr. Cicognani has adopted the serum treatment exclusively since 1899, having had experience that the other methods of treatment did not always prevent a fatal issue and when successful the sufferers could not resume their occupation until after a long period of convalescence. The workers now insist on having this treatment to the exclusion of every other and he states that the manufacturers are so certain of its efficacy that they hesitate no longer to use even Chinese hides. The workers, too, are now so willing to undergo treatment, since operative treatment is uncalled for, that they present themselves when there appears the

[13] Sullo Stato presente della Sieroterapia Anticarbonchiosa, Rivista d'Igiene et Sanita Pubblica, Anno xiv., 1903.

[14] Brit. Med. Jour., C. B. Lockwood and F. W. Andrewes, Jan. 7th, 1905. A. Bowlby and F. W. Andrewes, Feb. 11th, 1905.

[15] THE LANCET, Feb. 4th, 1905, p. 292.

[16] Quattordici Casi di Pustola Maligna, by Dr. Cicognani, Gazzetta degli Ospedali e delle Cliniche, No. 14, 1901.

TABLE X.—DETAILS OF 67 CASES OF EXTERNAL ANTHRAX TREATED BY SCLAVO'S SERUM.

Number.	Sex.	Age.	Occupation.	Situation of pustule.	Date of admission.	Probable stage (days).	Treatment (quantities of serum injected in cubic centimetres).	Result.	Resulting condition at site of lesion.	Date of falling off of eschar.	Date of discharge.	Duration in days after commencement of treatment.	First day.	Second day.	Third day.
1	M.	17	Tanner.	Chin. Œdema of neck.	1/3/00	Third.	30	Recovery.	Slight scar.	12/3/00	13/3/00	13	Marked diminution of œdema.	Further diminution.	—
2	M.	18	,,	Neck. Œdema extending over neck.	18/3/00	,,	30	,,	,,	30/3/00	31/3/00	13	Local condition unchanged.	Œdema still extensive.	Marked diminution of œdema.
3	M.	27	,,	Lower eyelid. Œdema involving upper lip.	30/3/00	Second.	30	,,	No visible scar.	9/4/00	10/4/00	12	Œdema increased.	Unchanged.	Œdema disappearing.
	M.	22	,,	Forehead. Œdema of scalp.	14/4/00	—	20	,,	,,	After some days.	Not stated.	—	—	Local signs improved.	—
5	M.	47	Peasant.	One on the right forearm; another on the left thumb. Marked œdema and enlargement of the axillary glands.	14/5/00	Third.	40 on the 14th and 20 on the 15th.	,,	Completely cured.	A few days.	26/5/00	12	Œdema increased in both arms.	Œdema disappearing.	—
6	F.	17	Tailoress.	Upper lip. Œdema extending to the cheek and eyelid.	23/5/00	,,	20	,,	No deformity.	31/4/00	28/5/00	5	Œdema diminished.	Complete disappearance of œdema on the eyelid.	—
7	M.	37	Tanner.	Back. Œdema of shoulder and arm.	6/8/00	,,	20	,,	Completely cured.	11/8/00	11/8/00	5	—	—	—
8	M.	39	Butcher.	Neck. Great œdema; difficulty of deglutition.	15/8/00	Sixth.	40	,,	,,	A few days.	28/8/00	13	Diminution of œdema.	Further diminution.	—
9	M.	22	Tanner.	Lower eyelid. Much œdema of both eyelids.	14/8/00	Second.	20 on the 14th and 20 on the 16th.	,,	No interference with function from slight scar.	25/8/00	25/8/00	11	Œdema increased.	Unchanged.	Improvement commencing.
10	M.	60	Hide merchant.	Upper eyelid. No pustule; rapidly extending diffused redness and swelling.	22/8/00	,,	Suspected at first to be diphtheritic inflammation of the conjunctival mucous membrane and treated on the 23rd with antitoxin. On the 24th 20 c.c. of Sclavo's serum and on the 26th 20 c.c.	Fatal.	—	—	—	—	—	—	—
11	M.	39	Milkseller.	Right forearm.	28/12/00	Sixth.	40	Recovery.	Scar hardly visible.	4/1/01	4/1/01	7	Œdema diminishing.	—	—
12	M.	16	Tanner.	Clavicular region. Much swelling.	20/6/01	Third.	40	,,	Completely cured.	About seventh day.	28/6/01	8	—	—	—
13	M.	45	Butcher.	Back of thumb.	1/6/01	Fifth.	30	,,	—	About seventh day.	About 7 days.	7	—	—	—
14	M.	23	Labourer.	Neck. Œdema extending over the clavicle.	3/8/01	—	40	,,	No trace of scar.	8/8/01	12/8/01	9	—	—	—
15	F.	19	Peasant.	Cheek. Œdema of eyelids, forehead, and lip; dyspnœa; difficulty of deglutition.	2/8/01	—	40 on the 2nd and 40 on the 4th.	,,	,,	15/8/01	15/8/01	13	Unchanged.	Unchanged.	—
a	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*i*	*j*	*k*	*l*	*m*	*n*	*o*	*p*

a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p
16	F.	44	Peasant.	Middle finger. Œdema of arm.	3/8/01	—	20	Recovery.	Completely cured.	12/8/01	12/8/01	9	—	—	—
17	M.	5	—	Chin. Œdema of lip and cheek.	4/8/01	—	30	,,	No trace of scar.	16/8/01	16/8/01	12	Unchanged.	Œdema disappearing.	Œdema disappearing.
18	M.	48	Peasant.	Ear.	4/8/01	Eighth.	20	,,	Completely cured.	—	12/8/01	8	Œdema disappearing.	—	—
19	F.	58	,,	Nose.	5/8/01	—	20	,,	No trace of scar.	—	11/8/01	6	Unchanged.	Marked improvement.	—
20	M.	22	,,	Elbow. Much œdema above and below lesion.	18/8/01	—	40	,,	Completely cured.	—	31/8/01	13	—	—	—
21	M.	44	,,	One on the right arm and one on the left arm.	18/10/01	Third.	40	,,	,,	—	28/10/01	10	—	—	—
22	M.	54	Butcher.	Back of hand.	27/10/01	Seventh.	40	,,	—	6/11/01	6/11/01	9	—	—	—
23	M.	61	Labourer.	Cheek.	28/11/01	—	40 on the 26th and 20 on the 27th.	,,	—	—	—	—	—	—	—
24	M.	32	Porter.	External angle of the eye. Eyelid closed by œdema.	13/10/02	Fourth.	20 and 10 on the 13th, 10 on the 14th, and 10 intravenously on the 15th.	,,	Some loss of tissue but function unimpaired.	—	—	—	Œdema diminishing.	Œdema increased; delirium.	—
25	M.	30	Tanner.	Bridge of the nose. Eyelid closed with œdema, which extended over chest.	21/4/03	Fifth.	40 on the 21st and 20 on the 22nd.	,,	Scar hardly visible.	—	Probably not later than 4/5/03	14	Condition improving.	Marked improvement.	—
26	M.	17	Sausage-maker.	Cheek. Much œdema.	1/3/03	Fourth.	22 on the 1st and 11 on the 2nd.	,,	Rapidly healed.	—	—	—	Œdema increasing.	,,	—
27	F.	14 months.	—	Cheek. Œdema of the whole face.	17/8/98	—	28 in three separate doses on the 17th.	,,	Scar hardly visible.	20/8/98	20/8/98	3	Œdema markedly diminished.	—	—
28	M.	33	Tanner.	One on the neck and one on the nose. Persistent vomiting.	15/6/99	Fourth.	40 on the 15th and 20 on the 16th.	,,	No trace of scar.	A few days.	—	Not more than 7.	Œdema disappearing.	Œdema disappeared.	—
29	M.	7	—	Temple. Œdema of neck.	9/8/99	Second.	20 in two doses on the 10th.	,,	—	15/8/99	15/8/99	6	Slight diminution of œdema.	Unchanged.	Marked diminution.
30	M.	69	Tanner.	Root of the nose. Œdema of eyelids.	14/10/99	—	30	,,	—	20/10/99	20/10/99	6	Slight improvement in local condition.	—	—
31	M.	2	—	Cheek.	4/11/99	—	10 on the 4th and 10 on the 5th.	,,	Completely cured.	9/11/99	9/11/99	5	Unchanged.	Improvement.	—
32	M.	20	Tanner.	Cheek.	8/11/99	—	30	,,	No trace of scar.	A few days.	Probably very early.	—	Œdema diminished.	—	—
33	M.	14	,,	Internal angle of the eye with great œdema.	7/2/00	—	20 on the 7th and 30 on the 8th.	,,	Complete loss of upper eyelid.	—	—	—	Œdema increased.	Further increase.	Improvement commenced.
34	F.	13	Tanner's daughter.	Chin. Much œdema of neck.	17/12/00	Fourth.	30 on the 17th and 30 on the 18th.	,,	No trace of scar.	21/12/00	21/12/00	4	Unchanged.	Improvement commencing.	—
35	M.	29	Tanner.	Neck. Slight œdema only.	29/12/00	—	40	,,	Slight scar.	4/1/01	4/1/01	6	—	—	—
36	F.	40	Peasant.	Thigh.	16/1/01	—	40	,,	—	—	—	—	—	—	—
37	M.	39	Tanner.	Shoulder.	30/1/01	—	40	,,	—	—	—	—	—	—	—
38	M.	—	Peasant.	Internal angle of the eye. Great œdema; delirium.	14/4/01	—	Had been cauterised on the 12th, when 40 c.c. were given, 40 c.c. on the 13th, and 40 c.c. on the 14th.	,,	—	—	—	8	Marked improvement.	—	—

DETAILS OF 67 CASES OF EXTERNAL ANTHRAX TREATED BY SCLAVO'S SERUM—(*Continued*).

Number	Sex.	Age.	Occupation.	Situation of pustule.	Date of admission.	Probable stage (days).	Treatment (quantities of serum injected in cubic centimetres).	Result.	Resulting condition at site of lesion.	Date of falling off of eschar.	Date of discharge.	Duration in days after commencement of treatment.	First day.	Second day.	Third day.
39	M.	20	Tanner.	Angle of the lower jaw. No œdema.	12/3/01	—	40	Recovery.	Completely cured.	Some days.	Some days.	—	—	—	—
40	M.	16	,,	Chin. Extensive infiltration of tissues.	20/3/01	—	40 on the 20th and 40 on the 21st.	,,	—	,,	—	—	Œdema increased.	Unchanged.	Slight improvement.
41	M.	36	,,	Angle of the lower jaw.	21/5/01	—	40 on the 21st and 20 on the 22nd.	,,	—	—	—	—	—	—	—
42	F.	50	Milk-seller.	Cheek. Great œdema.	12/8/01	—	Cauterised on the 10th. Condition became so much worse that the patient was admitted on the 12th, when 40 c.c. were given, and 40 c.c. on the 13th.	,,	Necrosis of upper and lower eyelid.	—	—	—	Condition improved.	—	—
43	M.	35	Tanner.	Eyebrow.	13/9/01	Third or fourth.	40	,,	No loss of tissue or deformity.	21/9/01	21/9/01	9	Slight improvement.	Œdema rapidly disappearing.	—
44	M.	16	,,	Forehead.	27/11/01	Third.	40	,,	Surface healed.	4/12/01	4/12/01	7	Improvement.	—	—
45	M.	45	Porter.	Neck.	13/2/02	Sixth or seventh.	40 on the 13th, 40 on the 14th, and 40 on the 15th.	,,	Completely cured.	Some days.	—	—	Unchanged.	Unchanged locally but general symptoms improved.	—
46	M.	22	,,	Root of the nose.	25/2/02	Fifth.	50	,,	—	5/3/02	At work some days before 5/3/02	6	Œdema diminished.	—	—
47	M.	15	Tanner.	Chin.	21/3/02	—	50	,,	—	27/3/02	27/3/02	7	Œdema increased.	Œdema less. General condition very good.	—
48	M.	24	Sorter of hides.	Cheek.	30/4/02	Third.	50	,,	—	—	5/5/02	5	Œdema diminished.	—	—
49	F.	55	Mother of tanner.	Lower jaw. Much œdema.	20/4/02	Fifth; seventh when treatment commenced.	Excision and cauterisation done on the 20th as there was no serum at hand. On the 21st the condition was worse and more so on the 22nd. On the 23rd 20 c.c. were injected intravenously and 20 subcutaneously.	Fatal.	—	—	—	—	Marked improvement after serum injection on the 23rd.	—	—
50	M.	50	Hide sorter.	Eyelid.	17/6/02	—	50 on the 17th and 50 on the 18th.	Recovery.	Slight scar but no deformity.	23/6/02	23/6/02	12	Œdema increased.	Unchanged.	Improvement.
51	M.	16	Tanner.	Cheek.	31/8/02	Fourth.	40	,,	—	7/9/02	7/9/02	7	—	—	—
52	F.	7	—	Cheek.	24/10/02	Third.	20	,,	Scar hardly visible.	2/11/02	2/11/02	9	—	—	—
53	M.	19	Tanner.	Neck. Œdema of cheek.	16/3/99	Fourth.	Paquelin's cautery and 30 c.c. on the 17th and 10 on the 18th and the 19th.	,,	—	—	25/3/99	9	—	—	—
54	M.	22	,,	Cheek.	16/3/99	Fifth.	Paquelin's cautery and 10 c.c. on three successive days.	,,	—	—	25/3/99	9	—	—	—
a	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*i*		*k*	*l*	*m*	*n*	*o*	*p*

a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p
55	F.	30	—	Forearm. Severe general symptoms.	19/3/99	Eighth or ninth.	Paquelin's cautery and 190 c.c. in seven days.	Recovery.	—	—	—	Probably 10 or 12	—	—	—
56	M.	18	Tanner.	Neck.	25/10/97	Sixth.	20 in two separate doses on the 25th, 10 on the 26th, and 5 on the 28th.	,,	Small scar.		1/11/97	7	Œdema diminished.	—	—
57	M.	17	,,	Neck.	5/1/98	,,	40 in three separate doses.	,,	Scar hardly visible.	19/1/98	12/1/98	7	Marked increase in œdema.	—	—
58	M.	14	,,	Eyebrow. Eye closed by œdema.	7/2/98	Fourth.	55 in two doses on the 7th and 20 on the 9th.	,,	No impairment of function or deformity.	19/2/98	18/2/98	11	—	—	—
59	M.	18	,,	—	28/2/98	Second.	30 on the 28th and 10 on March 1st.	,,	—	—	7/3/98	7	Œdema diminished.	—	—
60	F.	8	—	Two on the neck. Much œdema.	6/5/04	,,	20	,,	Completely cured.	—	17/5/04	11	,,	—	—
61	F.	28	Peasant.	Thigh.	7/6/04	Sixth.	40	,,	,,	—	20/6/04	13	—	—	—
62	F.	35	,,	,,	2/7/04	—	Had been cauterised before 40 c.c. of serum were injected.	,,	—	—	—	—	—	—	—
63	M.	4	—	Neck. Œdema closing eyelids and extending over the chest; difficulty of deglutition.	15/7/04	—	10 and 20 on the 16th.	,,	No trace of scar.	—	25/7/04	10	Œdema increased.	General condition improved.	—
64	M.	63	—	Cheek. Œdema general over the face and neck. General symptoms grave.	10/8/00	Sixth.	40 on the 10th, 10 intravenously on the 11th, and 10 on the 12th.	,,	No deformity.	—	17/8/10	7	Improvement.	—	—
65	M.	30	Cattle-dealer.	Forearm. Great œdema. Temperature 105°.	8/8/03	Fifth.	Thermo-cautery on the 5th. No improvement. On the 8th 150 c.c. were injected intravenously, 50 c.c. intravenously after 12 hours, and 40 c.c. on the 9th subcutaneously.	,,	—	—	About 14/8/03	About 7	Œdema diminished.	—	—
66	M.	27	Butcher.	Forearm. Œdema. Temperature 103°.	2/10/03	—	Thermo-cautery, followed by 80 c.c. intravenously and 30 c.c. subcutaneously.	,,	—	—	6/10/03	In four days returned to work.	—	—	—
67	F.	36	—	Hand. Pulse 150; temperature 104°. Vomiting.	12/8/02	Fourth.	Fuming nitric acid and chloride of zinc. 2 per cent. injections of carbolic acid had been tried. 40 c.c. were given on the 12th, 20 c.c. on the 13th, and 10 c.c. on the 14th.	,,	After 15th concern only for local injuries.	—	—	—	Diminution of œdema.	—	—

REMARKS.

Case 7.—Local symptoms diminished rapidly in a few days. Case 10.—The patient improved until the 29th when he had a rigor, was seized with vomiting and delirium, followed by collapse and death. Case 15.—Entire disappearance of œdema in three days after second injection. Case 20.—By the third day the œdema had greatly diminished. Case 27.—Improved rapidly in a few days. Case 24.—Symptoms and local signs markedly improved by the 18th. Case 28.—Up and about on the 19th. Case 33.—Plastic operation necessary. Case 35.—Remained in bed for only a few hours after injection. Case 36.—Pustules followed normal course. Case 37.—Œdema disappeared in a few days. Case 39.—Got up on the 20th. Case 41.—Got up on the 25th. Case 49.—Continued to improve until suddenly seized with collapse and death on the 25th. Case 55.—Bacilli found in blood and urine on the first and third day but not on any later date.

smallest pimple or boil suggesting anthrax. Dr. Lazzaretti of Siena, a town with many tanneries, has much the same story to tell and says that the efficacy of the serum is known so well in the country round about that peasants come from a distance to receive treatment. Recently in Milan I visited the large horsehair factory of Pachetti Brothers, employing some 700 workers. There, in addition to the steam disinfection of horsehair, a physician attends every morning to treat accidents and slight ailments, keeping careful watch for conditions or appearances suggesting anthrax. The surgeon's room is fitted up as a bacteriological laboratory for verification of anthrax, a supply of serum is kept, and thus cases in the earliest stages are caught, treated, and recover without cessation of work for more than a day or two. Signor Pachetti states that he has no fear whatever of the disease among his workpeople, as he has seen so many successes in dealing with it by this method. It was, indeed, this last piece of information communicated to me a year ago by Mr. Albert Webb, of the firm of Edward Webb and Sons, carpet manufacturers, Worcester, which led me to inquire into the method of treatment.

TABLE XI.

Situation.	Serum treatment alone.	Excision and serum treatment.
Neck (including angle of jaw) ...	13	2
Cheek (including ear)	11	2
Eyelid	5	2
Eyebrow	2	—
Other parts of face	13	—
Upper extremity	8	4
Lower extremity	2	1
Trunk	1	—
Not stated	1	—
	56	11

So far I have said nothing of the source or preparation of the anti-anthrax serum. The whole of the cases which I have tabulated with two exceptions have been treated with serum prepared by Sclavo in the Pathological Institute of the University of Siena.

Attempts to protect animals, especially sheep and cattle, from contracting virulent anthrax by producing in them a mild form of the disease which rendered them immune against virulent bacilli date back to the year 1880, when Toussaint [17] suggested inoculation by means of attenuated cultures of the bacillus which had been kept at a temperature of 55° C. for ten minutes. Pasteur and Chamberland elaborated this method, very uncertain in its results, on such practical lines that since the crucial experiments made in May, 1881, it has been the principal means adopted, more especially in France, for preventing the spread of the disease to the unaffected animals of a herd. Culture of anthrax bacilli at a temperature of from 42° to 43° C. caused them to lose the power to produce spores and lessened the virulence independently of their power of multiplication. Inoculation of cultures kept at this temperature for 24 days sufficed to kill mice but not guinea-pigs (the first vaccine), while kept at the same temperature for only 12 days the second vaccine killed both mice and guinea-pigs but not rabbits. Sheep inoculated with a small quantity (one-tenth of a cubic centimetre of Vaccine 1 and subsequently after one or two weeks inoculated with a similar small dose of Vaccine 2) were found to resist inoculation with virulent anthrax. Cattle and horses could be protected in a similar way, the doses of the two vaccines in their case being doubled. Numerous experiments have since been made by the addition of chemicals or interaction of other bacteria to modify the method but without material success. Considerable difficulty was found in maintaining the two vaccines at proper strength. Sometimes the first vaccine in relation to the second was too weak and death occurred immediately after the second inoculation. In other cases both were too feeble and failed to afford sufficient protection.

[17] Comptes Rendus, vol. xci., p. 303.

The most damaging criticism against Pasteur's method was, however, that made by Koch who showed that the method of inoculation did not protect animals from infection derived through the intestinal tract, the manner in which, under natural conditions, the disease is most prone to arise. The duration of the immunity, moreover, from inoculation does not last longer than one year, so that repeated inoculations become necessary. Still, the following figures [18] show the scale on which Pasteur's inoculation is practised and the results obtained during the 12 years 1882-93. During that time 3,296,815 sheep were vaccinated, with a mortality either after the first or second vaccination or during the subsequent 12 months of 0·94 per cent., as contrasted with the ordinary mortality in all the flocks in the district of 10 per cent. During the same time 438,824 cattle were inoculated, with a mortality of 0·34 per cent., as contrasted with a probable mortality of 5 per cent. if they had been unprotected.

The successful efforts made by Behring in obtaining a protective serum against diphtheria and by Kitasato against tetanus stimulated inquiry in a similar direction as regards anthrax by Behring, Hankin, Metchnikoff, and Roux. All experiments, however, failed to show that by means of the blood of animals either naturally immune or only slightly susceptible passive immunity in other animals could be produced with any degree of certainty. By immunity is to be understood an acquired insusceptibility to the disease, of strictly specific character, variable only within narrow limits, and to be recognised as a condition of striking and lasting character. Marchoux in 1895 [19] first succeeded in immunising actively rabbits and sheep, using Pasteur's Vaccines 1 and 2, and then injecting virulent cultures subcutaneously, at first in small and then in greatly increased doses. The serum was taken from the insusceptible animals from 15 to 20 days after the last inoculation, and of four rabbits which received serum in amounts varying from 2 cubic centimetres to 9 cubic centimetres, followed by injection 24 hours later of one-third of a cubic centimetre of an anthrax culture (sufficiently potent to kill two control animals in 48 hours), one survived and death was delayed in another until the seventh day. In a later series of experiments he found that seven out of 24 rabbits which had been first inoculated with anthrax cultures and then treated with serum survived. Already in 1895 Sclavo was able to assert from his experiments that (1) sheep brought to a high degree of active immunity can furnish a serum against anthrax; and (2) this serum shows prophylactic and curative power against anthrax when inoculated into rabbits; and we can trace the germ of the further development of the treatment to man in the last sentence of his paper in which he refers to the hope of being able by means of serum-therapy to combat anthrax both in man and in the domestic animals, from the fact that they are less susceptible to anthrax than are rabbits. He next sought to obtain a more powerful serum and as he recognised that species and individuality were features of considerable moment in this respect, he instituted comparisons as to the efficacy of the serums obtained from the sheep, the goat, the ox, the horse, and the ass. From the last-named animal the most powerful serum was obtained without marked differences in strength from among the five animals experimented on and it is serum from the ass which he uses. This was contrary to the opinion of Behring that the strongest antitoxic sera are obtained from animals which are most susceptible to the particular pathogenic organism, in that the ass is much less susceptible to anthrax than is the sheep or the goat. Even with the ass, however, it is desirable to immunise three or four animals and to select from among these the one producing the most active serum. In order to expedite the immunising effect he instituted simultaneous active and passive immunising treatment and by so doing was able to protect guinea-pigs (in cases where the control animals died on the third day) by simultaneous injection of cultures of anthrax and of the serum into the peritoneal cavity. He then tried to see whether the serum did not succeed better if injected into the veins and whether it was not possible to immunise sheep against anthrax with smaller doses than those used by Sobernheim (to be described later), taking advantage of this co-temporaneous active and passive immunising method.

[18] Quoted from Muir and Ritchie's Manual of Bacteriology, 1902, p. 300.

[19] Annales de l'Institut Pasteur, 1895.

This he found he could do and thus developed a new process of immunisation against anthrax—namely, the injection of a small dose, five, ten, or 15 cubic centimetres, of anti-anthrax serum, together with a culture of slightly attenuated bacilli, followed from 12 to 14 days later by a further injection of virulent anthrax cultures. In 1898 he succeeded in protecting sheep from anthrax of a very virulent nature by injection into the veins of small doses and satisfied himself of the curative properties of the serum by proving that ten cubic centimetres administered 24 hours after inoculation of virulent anthrax cultures protected sheep in cases where one of the control animals died three hours and the others 14 hours later.

In view of the experimental results showing the curative power of the serum and its innocuousness when injected in very large doses into animals Sclavo next turned his attention to treatment of malignant pustule in man and the first case was treated in June, 1897. I have had the opportunity, through the kindness of Dr. Sclavo, of seeing all the stages in the preparation of the anti-anthrax serum in the Pathological Institute of Siena. On August 10th from an ass which had undergone the process of immunisation during a period of two years about 150 cubic centimetres of blood were taken from the left jugular vein. Similar bleeding had been practised on more than 50 previous occasions for obtaining the serum. On the 13th the clot having separated the serum was decanted and ether was added to the extent of 3 per cent. of the whole bulk. On the 13th to test the efficacy of this serum six rabbits, three to act as controls, were inoculated subcutaneously in the abdomen with 0·5 cubic centimetre of a suspension of a culture of anthrax (grown on agar on August 11th and kept at 36°–37° C.). Three of the rabbits received also at the same time ten cubic centimetres of the serum injected in one of the auricular veins. All the control animals were dead in 36 hours with extensive œdema at the point of inoculation and anthrax bacilli were found in the blood and tissues post-mortem. The three which received the ten cubic centimetres of serum remained well except for slight induration at the point of inoculation until the 16th, when further opportunity of observing them ceased. The efficacy of the serum thus having been proved the serum was then introduced with antiseptic precautions into the ten cubic centimetre tubes in which form it is used. To maintain the immunisation of the ass on August 14th ten cubic centimetres of a culture of anthrax in bouillon containing 2 per cent. gelatin were injected subcutaneously into the right and left side of the neck. This culture was made on the 13th and was mixed with an old culture prepared in the same way a month previously. The use of gelatin in the fluid injected is believed to prevent the formation of an abscess at the point of inoculation. There were much swelling and tenderness which had in great part disappeared by the morning of the 16th. The following is the protocol of the treatment of an ass undergoing the immunising process. May 21st, 5 P.M.: Bled freely; immediately afterwards ten cubic centimetres of serum injected subcutaneously; temperature 38·2° C. May 22nd, 4 P.M.: Injection subcutaneously of one cubic centimetre of a 24 hours' culture in broth (second vaccine). May 23rd and 24th: Temperature 37·8° C. May 30th: Inoculation into the neck of ten cubic centimetres of serum plus one cubic centimetre of a culture of virulent anthrax (for this a 24 hours' agar culture had been emulsified with five cubic centimetres of bouillon). June 1st: Temperature 38·5° C.; marked local reaction. June 14th: Complete recovery; inoculation of one cubic centimetre of virulent anthrax prepared as before. July 8th: Two and a half cubic centimetres of similar culture. August 10th: Ten cubic centimetres of similar culture. August 27th: 20 cubic centimetres of similar culture. Sept. 14th: 20 cubic centimetres of similar culture. Sclavo stated that this treatment might without detriment have been made more rapid by inoculating at intervals of ten days.

Before leaving the subject of the history of serum treatment it is desirable to state what stage has been reached in similar serum treatment of the large domestic animals. This can be best done by study of the work of Sobernheim,[20] because although Sclavo's serum can be, and is, used for this purpose it has never been tried on anything like the same scale. Sobernheim's first series of experiments were carried out in 1897 with serum of cattle which had been subjected to Pasteur's treatment and with the serum of one cow which, after recovery from spontaneous anthrax, had been further treated by Pasteur's method. The results, so far as concerned the production of immunity in rabbits, guinea-pigs, and mice, he considered so variable that they were contrary to any idea of specific action of the serum. Some of the animals lived, others died with the usual rapidity, while in others again death was delayed for several days. He inclined to attribute such success as he obtained merely to increased resistance, as the same sort of result was obtained after inoculation with normal serum. More satisfactory results were obtained from immunising two sheep, one slowly, the other rapidly, to such a degree that they could stand enormous doses of anthrax culture without inconvenience. The serum of the one that was rapidly immunised showed remarkable protective properties in retarding a fatal issue in rabbits for from six to eight days. But even here no certainty in action could be formulated, as sometimes it was not the largest dose which appeared to confer the greatest immunity. The main conclusion which he drew from his experiments at this time (1898) was that in the blood of animals brought to a high degree of immunity against virulent anthrax no specific immune bodies in any "degree worth naming" are present. He held out little hope that serum-therapy would be used as a curative agent in anthrax in animals because of the rapidity of the disease and to be prophylactic it must be certain in its action (variable only within narrow limits), it must be durable, and lastly, it must be effective against inoculation of spores.

In a later series of experiments Sobernheim used the same sheep as were used in the previous experiments but which had received repeated subcutaneous injections of very virulent cultures at fortnightly intervals for nine months. Blood was taken from 12 to 14 days after the last injection and 24 hours after treatment with the serum anthrax cultures were inoculated into rabbits. Some were saved from what would certainly have been a lethal dose by this serum treatment and in others death was delayed; but the same uncertainty in the result was found as sometimes small doses of three, six, or nine cubic centimetres were as successful as doses of 15 cubic centimetres. Sometimes it protected against inoculation with spores. Sometimes the animals died even when there were no spores. The immune bodies were found present in the blood in sufficient amount to prevent death or to delay a fatal issue when inoculated with cultures of anthrax four or five days after the serum treatment was commenced. He obtained much better results when sheep were treated with serum. Of five sheep treated with the serum in large quantities of from 200 to 500 cubic centimetres and then inoculated with virulent anthrax cultures all survived, while two control animals died within 24 hours. In a further series of experiments on sheep he obtained still more successful results by using the combined active and passive immunising method already described—simultaneous inoculation of anti-anthrax serum and virus or inoculation of them each separately within a short interval of time. He used for the virus anthrax cultures of about the strength of Pasteur's second vaccine, believing that with this strength injurious action would not result in the presence of the immunising serum. As a matter of fact, it was found to be non-injurious and the immunising effect was far greater than that obtained from serum alone.

Subsequently, to test this combined method of producing immunity Sobernheim carried out experiments over a period of two years—1900–1902—with the support and encouragement of the Chamber of Agriculture of Saxony. 33 sheep, 18 oxen, and some horses were treated first with attenuated anthrax cultures and later with highly virulent cultures in increasing doses until a degree of immunity was reached so great that inoculation of enormous quantities of most virulent anthrax cultures could be borne without material ill effects resulting. The serum and culture were not mixed together but five, ten, and 15 cubic centimetres of serum were inoculated into the left side and immediately after from 0·5 to 1 cubic centimetre of the slightly attenuated anthrax culture into the right. After from 12 to 14 days inoculations with virulent anthrax cultures were made. The results of laboratory experiments were entirely satisfactory as ten cubic centimetres of the serum sufficed to protect while the control

[20] Experimentelle Untersuchungen zur Frage der Aktiven und Passiven Milzbrand-Immunität, Zeitschrift für Hygiene, vol. xxv., 1898. Weiterer Untersuchungen über Milzbrand-Immunität, ibid., vol. xxxi., 1899. Berliner Klinische Wochenschrift, No. 22, 1902. Deutsche Medicinische Wochenschrift, Nos. 26 and 27, 1904

animals died in from 24 to 36 hours. The immunity, too, thus conferred protected three out of four sheep from contracting the disease through the intestinal tract. Its curative power was also shown in that of five sheep inoculated with virulent anthrax and then subcutaneously treated at intervals of from ten minutes to six hours later with 40 cubic centimetres of the serum, two survived while death was delayed in the others from four to eight days. The control animals were killed in one and a half days. It was necessary to apply the method on a much larger scale in order to determine its general applicability in veterinary practice. Districts in which outbreaks of anthrax were occurring were therefore selected and 2700 cattle were treated, almost all of them by means of the combined method. No deaths were attributed to the inoculation and no serious injury to health, even when the animals were only two or three weeks old. There were a rise of temperature and slight loss of appetite. From the moment the inoculations began cases of anthrax ceased to break out afresh. The immunity produced was lasting, as for a further nine months (up to the time of reporting), in spite of many outbreaks in untreated animals, none of the treated suffered. With larger doses animals already affected with the disease recovered. The following are examples of the success of the treatment.

1. On one farm in November, 1900, in consequence of outbreaks of anthrax all the cattle had been inoculated with Pasteur's vaccine. Despite this in the following year many died. In January and February of 1902 12 animals had died, three succumbing the day before treatment commenced. On the day itself two died and five became seriously ill. The five which were manifestly ill and others showing fever received 150 cubic centimetres of the serum. Of the remainder 80 received 25 cubic centimetres of the serum alone and 50 received 15 cubic centimetres of the serum plus one cubic centimetre of culture. 60 were not treated as there was not enough material. Of the five seriously ill four completely recovered. The one which died did so after six days. None of the others became ill and only among those which received no treatment did cases occur.

2. On another farm in March, 1901, in consequence of from six to eight cases since the commencement of the year, following on several others the year before, 318 cattle were inoculated at the beginning of April with 15 cubic centimetres of serum plus one cubic centimetre of culture. No more cases occurred.

Sobernheim feels himself, therefore, in view of these results, justified in speaking of anthrax serum as possessing not inconsiderable prophylactic and curative powers. The combined immunising method, he says, is capable of giving an extraordinarily powerful and lasting protection and he summarises its advantages over Pasteur's method as follows: (1) that it is free from danger; (2) that it is effective in one day and has not to be repeated; (3) that a stronger dose and more active cultures are used than is the case with Pasteur's vaccine and probably a more lasting protection is conferred; (4) that it protects from infection by way of the intestinal tract; and (5) that it can be used for curative purposes.

Sobernheim's latest contributions on this subject give further details of the success which has attended his method in Europe and in South America. At the time he wrote (March, 1904) the number of animals treated was about 75,000, of which from 12,000 to 13,000 were sheep, 2000 horses, and the remainder cattle. He himself in 1903 superintended the injection of large herds infected with anthrax on the *estancias* in Argentina. Slight rise of temperature, diminished desire for food, and transitory lessening in cows of the production of milk are observed in some cases where the injection follows a normal course. He refers to the failures experienced in some of the earlier cases treated on three different farms. In one instance of 60 animals about one half developed more or less extensive infiltrations at the point of inoculation and four died. Of the total 75,000 animals treated nine deaths are attributable to the inoculations. Serious illness and death in almost all cases occurred to draught oxen which before and after the inoculations were subjected to hard work. 40 cows inoculated with the same material on the same day and by the same veterinary surgeon showed none of the symptoms present in the draught oxen. Sobernheim cites, in support of his contention that fatigue increases sensibility to anthrax, the experiments of Charrin and Roger on the rat. Further, variability in the virulence of the anthrax vaccine would account for the failures, and since the time that attenuated cultures of the same degree of virulence only have been used there has been no catastrophe among the last 50,000 animals treated.

I have now stated the facts as to the preparation of, and the results from treatment by, anti-anthrax serum. When attempt is made to explain its action we are still almost totally in the dark. The anthrax poison is not comparable with that of diphtheria or tetanus because never yet satisfactorily, despite numerous experiments, has any toxin been obtained from filtered cultures of the bacillus the injection of which produces the specific effects of the disease such as are obtained from injection of diphtheria and tetanus toxins. It is customary from its tendency to generalisation on inoculation to describe the anthrax bacillus as an exciter of septicæmic processes, but the evidence from the manifestation of the behaviour of the bacillus in the human body undoubtedly points to the production of toxin of some sort. The presence of an excessive leucocytosis at the point of inoculation, the local necrosis, the œdema, the effects extending to distant organs, and the constitutional symptoms point to such toxic action. When, therefore, we recognise the absence of toxins from filtered cultures grown in artificial media it must not necessarily be supposed that this holds good for the life processes of the bacillus when developing on its natural soil in the body. Further, the poverty of the blood in bacilli until immediately before death is inconsistent with the view that the extent of the symptoms is due to the multiplication of the bacilli apart from toxic production. Sobernheim cannot speak positively on the subject. He regards the artificially acquired immunity from the use of the serum as probably due to bactericidal processes rather than to antitoxic, on the ground that the whole character of anthrax infection is septicæmic in nature, but he does not consider that specific bactericidal effect of the anti-anthrax serum has been definitely proved either inside or outside the animal body. The serum does not decrease the development of, much less kill, the bacilli *in vitro* any more than does normal serum, nor does it bring about definite morphological changes in them. For days and sometimes weeks after subcutaneous inoculation of large quantities of anthrax bacilli into highly immunised sheep the bacilli can be found at the point of inoculation. On the eighth or twelfth day after inoculation he has found them in the blood which, in his opinion, points to the likelihood of the development of antitoxic properties. He is convinced that the animal organism must intervene and adapt the specific protective or anti-bodies in some way suitable to its needs. One animal may thus impress more of its own character upon the immune body which it evolves than another. Otherwise it would be impossible to explain, on the supposition that the serum was antitoxic alone, why the same quantity of serum in one case confers immunity on sheep and not on rabbits, and in another on sheep and rabbits both but not on guinea-pigs. This he thinks is explained by the complexity of bacteriolysins.

Ivo Bandi[21] states that the serum which he prepared from the sheep and used successfully in two cases in man possessed considerable bactericidal and antitoxic properties. To test its bactericidal power he followed Bordet and Gengou's method of determining the presence of immune body—namely, the addition, to fresh serum containing a sufficient quantity of complement, of anthrax bacilli sensitised by exposure for some time to the influence of the specific serum heated to 55°C. If there be immune body in the latter the complement in the fresh serum will be seized upon by the immune body and bacteriolytic power will be shown. He adds: "There is no experimental method by which to determine exactly the antitoxic power shown by the anti-anthrax serum, mainly because we have not yet succeeded in preparing a true anthrax toxin and are ignorant how far the products derived from cultures of the anthrax bacillus resemble in constitution and in effect the toxic products elaborated by the same bacillus in the living organism. Anyone, however, who has had occasion to make use of a properly prepared anti-anthrax serum in exceptionally severe cases of anthrax in man can easily assure himself of the existence in this serum of energetic antitoxins. In serious cases of this kind the toxic phenomena are evident and very distinct but after the use of the serum they diminish and disappear with remarkable rapidity." Sclavo, however, has

[21] THE LANCET, August 6th, 1904, p. 372.

not found that heating his serum to 55° C. for one hour in any way prevented its power of conferring immunity on rabbits. Thinking that possibly the rabbit's blood itself might contain sufficient complement to take the place of that excluded by the heating to 55° C. he prepared an anti-complement serum and treated rabbits with a mixture containing five cubic centimetres of his own anti-anthrax serum (heated to 55° C.) and 10 to 15 cubic centimetres of anti-complement serum (similarly heated). At the same time injection subcutaneously of virulent anthrax cultures was made but again the rabbits survived an otherwise certainly fatal infection. Metchnikoff,[22] from his own numerous experiments and those of several others working in his laboratory on the natural and acquired immunity of the dog, the white rat, rabbits, &c., believes that phagocytosis is the main factor in ridding the organism of the bacilli but that the act is dependent on the degree of virulence of the bacilli, and as a consequence of this varying degree of virulence, on the nature of the exudation set up as regards the presence of microphages or other leucocytes. Thus inoculation of attenuated cultures into one ear of a rabbit and of virulent cultures into the other calls forth in the first case circumscribed inflammation with presence of microphages in abundance, which quickly devour the bacilli and set up a leucocytic wall against further invasion; whereas in the second there is an abundant serous exudation containing but few leucocytes in which the bacilli remain free, multiply without interference, and ultimately cause death by septicæmia. Almost precisely similar differences are manifested when anthrax bacilli are inoculated under the skin of a vaccinated and unvaccinated rabbit. The exudation and resulting phenomena in the vaccinated resemble those following on inoculation of attenuated virus. This he explains by saying that a positive chemiotaxis is set up in the one case and a negative in the other. Finally, to explain the passive immunity conferred on rabbits he relies on Marchoux's experiments which he had the opportunity of watching. These showed that simultaneous introduction of bacilli and of immune serum into the peritoneum was followed by rapid englobement of the bacilli, so much so that in a few hours the peritoneal exudation was sterile and, further, that when, artificially, the arrival of microphages at the point of inoculation was hindered, and phagocytosis therefore delayed, the rabbits succumbed to fatal anthrax. The absence of phagocytosis observed by Sobernheim he explains on the ground that immunisation was not as complete as in Marchoux's experiments and consequently the conditions of negative chemiotaxis were set up. Thus immunity against anthrax in the animals experimented on, whether natural, acquired, or passive, is due to phagocytic action, which, however, is only able to manifest itself when the bacilli are introduced in an attenuated form or when they have been weakened in the body by contact with a substance contained in the microphages.

Sclavo will not allow further expression of opinion than that the bactericidal substances of the anti-anthrax serum do not correspond in structure with those present in other bactericidal sera and that in his experience they have only a secondary importance, notably inferior to that of the substances contained in it which stimulate the defensive action of the phagocytes. Facts which, in his view, confirm the stimulating influence of the serum on the phagocytes he adduces from the following experiments. The serum of sheep killed by intravenous injection of anthrax cultures was nevertheless capable of protecting rabbits inoculated subcutaneously with anthrax. Bacilli, therefore, thus injected into the veins and carried to organs where they are bathed in the blood fluids are probably not so favourably situated for allowing phagocytosis to take place as when they are present in the subcutaneous connective tissue. This may serve to explain why the dog, the natural immunity of which to inoculation is considerable, succumbs at once to intravenous injection. In rabbits, too, the action of the serum is more pronounced when it has been injected into the veins from 12 to 24 hours before rather than simultaneously with the cultures. Were the serum merely antitoxic it would not be possible for such differences to occur as are shown in the potency of the serum obtained from different animals. However big the doses of a weak serum, no such good results are obtained as from moderate doses of a powerful serum, probably from the fact that the weak serum insufficiently stimulates the leucocytes. On the other hand, Sobernheim and Radziewsky [23] found that when anthrax bacilli were introduced into the peritoneal cavity or developed there from the spore stage phagocytosis was present in a very small degree and at a late stage, while the swelling up and granular disintegration of the bacilli were obvious. Kisskalt [24] also, distrusting the results on this point obtained by so rough a method as removal by means of capillary pipettes of material from the peritoneal cavity, tested the same point and came to the same conclusion by means of sections. While in white mice phagocytosis was found by him to be pronounced with inoculation of many kinds of non-pathogenic organisms, living and dead, and with all kinds of inanimate foreign particles, it was absent with organisms markedly pathogenic. It was not that the leucocytes took no part in the reaction against the pathogenic organisms. On the contrary, the latter appeared to act chemiotactically on the leucocytes, which not only formed an inclosing wall round them but often lay quite close to the bacillus and only the last act of phagocytosis failed. In this respect his result is comparable with the view of Metchnikoff on inoculation of virulent germs.

The simplest explanation of these differing views is to assume the action of an intracellular toxin, which in slight amount attracts, and in large amount keeps back, the leucocytes. We get less confused if, dismissing phagocytosis from our minds, we still retain the idea of the cells of the body and accept the principle of immunity to be the fabrication by these cells of the bactericidal substances which, passing into the intra- and extra-vascular fluids, destroy the bacilli. And in the case of anthrax it is not difficult to imagine the formation of the bactericidal substances to be stimulated from the intracellular poisons or from other substances liberated by the death and disintegration of the bodies of the bacilli themselves. Radziewsky [25] has shown by special staining methods that all the time the development of an anthrax infection is proceeding the multiplication of organisms is accompanied by death and destruction of others. Introduction of spores of anthrax on threads into the peritoneal cavity of guinea-pigs is followed up to the ninth hour by enormous increase in number so that a thick network of them is formed, all staining well. Between that and the eleventh hour the reverse process goes on, during which an extraordinary destruction takes place, and by the fourteenth almost all are dead. This helps much to explain the negative bacteriological find in several cases of anthrax, as the number of bacteria which may be found at the end of an infection may not correspond in the slightest degree with the number that may at one time or another have been present. If there was no formation of bactericidal substances as the vital powers became exhausted there would be no sufficient reason to explain the decrease rather than increase of bacilli. And it is probable that the bactericidal substances which kill the bacillus are the same as are produced in the organism during the process of immunisation. A fatal issue in anthrax is to be explained on this view of Radziewsky by assuming that as the microbes increase so the cells of the body react to destroy them. The bactericidal substances thus produced destroy so many bacilli that the substances liberated at their death exceed the minimum lethal dose. The use of the serum, therefore, would be to assist in the destruction of the bacilli before the number was such that from their death so much poisonous substance was produced as to be fatal. If this view explained everything its use would be limited to early cases and in late cases might even be a direct cause of death. From consideration of the cases treated in man by the serum we can hardly believe that its only effect is to cut short the capacity of the bacilli to increase at a time when the amount of the intracellular poisons has not yet reached a lethal dose. Recently Macfadyen and S. Roland,[26] by special methods consisting in the use of very low temperatures, have obtained extracts from the bodies of typhoid bacilli or, in other words, their intracellular toxin. Injection of this into monkeys, rabbits, and goats over a period of from four to six weeks produced a serum which showed (1) marked bactericidal and antitoxic properties; and (2) curative and preventive properties as regards the typhoid bacilli and their intracellular toxin. This is the first instance where a serum has been obtained which was found to be bactericidal against a

[22] L'Immunité, 1902.

[23] Zeitschrift für Hygiene, 1901, vol. xxxvii., p. 33.
[24] Ibid., 1903, vol. xlv., pp. 18, 19. [25] Loc. cit., p. 34.
[26] Centralblatt für Bakteriologie, vol. xxxiv., 1903, p. 765.

particular organism and antitoxic as regards the toxin contained in its substance.

The work of Wright and Douglas,[27] with its proof that the blood fluids by means of certain substances, "opsonins," contained in them modify bacteria in a manner which renders them a ready prey to the phagocytes, may be expected to throw light on the action of the anti-anthrax serum. The anthrax bacillus unfortunately, owing to thread formation, does not appear to lend itself well to the particular method of experiment employed by them—namely, averaging the number of bacteria ingested by a certain number of leucocytes—but in experiments on the opsonic power of human blood in its relation to the anthrax bacillus when unheated serum was used they say, "Although enumeration was impossible there was everywhere evidence of phagocytosis. In the few cases where the leucocytes had not ingested bacteria they were found to have extended themselves in a characteristic manner along the bacterial thread." Repeating the experiments with heated serum "there was practically no sign of phagocytosis." The presence of opsonins in quantity in the blood after inoculation of serum would account for the observation of Andrewes in the case already referred to in which no anthrax colonies could be cultivated 19 hours after injection of serum although their presence had previously been abundantly proved, such few disintegrating bacilli as were found being mostly inclosed in leucocytes.[28]

The Hunterian Lectures

ON

THE PHYSIOLOGY AND TREATMENT OF SURGICAL SHOCK AND COLLAPSE.

Delivered before the Royal College of Surgeons of England on March 6th, 8th, and 10th, 1905.

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LECTURE II.[1]

Delivered on March 8th.

ÆTIOLOGICAL FACTORS IN THE PRODUCTION OF SHOCK DURING OPERATIONS.

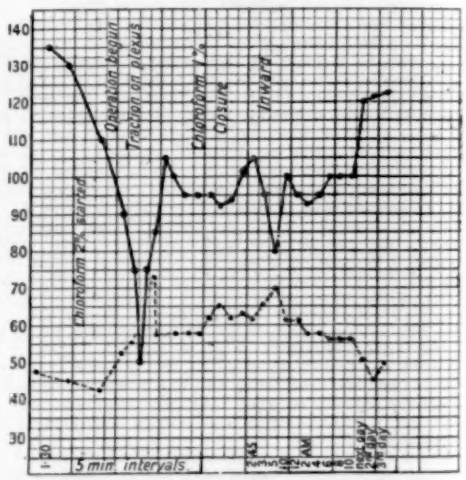
The relation between shock and the region operated upon.—As a general rule it may be stated that the degree of shock produced by an operation is dependent upon the amount of traumatism to the nerve elements of the part operated upon. Thus traction upon important nerves or injury to them will cause more shock than the same amount of interference with other tissues. I have observed that traction upon the brachial plexus during the process of clearing out the axilla in an amputation of the breast will cause a marked fall in blood pressure (see Fig. 5). It may be stated that the degree of shock caused by an operation is in direct proportion to the area of skin and muscle injured and the relative number of nerve endings in them. Thus crushing injuries of the feet or hands will cause more pronounced shock than amputation of the limbs high up. Crile has observed that in dogs crushing the paw will cause a greater fall in the blood pressure than section of the main nerves in the thigh. Injury to parts richly supplied with nerve endings, such as the genital organs, is very liable to cause shock. The area of wound surface exposed during an operation would also seem to be a factor in the production of shock. Crile states that in animals subjected to extensive removal of integument shock is induced with a rapidity proportional to the area exposed and its depth corresponds to the duration of exposure.

Of all injuries those such as burns and scalds which involve a large area are most frequently followed by shock. The shock produced by severe burns or scalds is due not so much to the severity of the injury as to the area of injured tissue and the number of nerve endings involved. Thus dangerous or fatal shock more frequently follows burns of the second and third degrees than those of the fourth and fifth degrees, because in the latter the nerve endings are destroyed, while in the former they are injured but can still send impulses to the nerve centres.

The first effect produced upon the blood pressure by injury to any part of the body richly supplied with nerve endings, such as the genital organs, the neck of the bladder, and the rectum, is a rise. Often a very marked rise in blood pressure occurs at first. If the injury is continued or is very severe this initial rise is either replaced by a fall in blood pressure or is followed by a fall. Thus in the operation for hæmorrhoids a very great rise in pressure almost invariably results from dilating the sphincter or from cutting away or ligaturing piles which involve the muco-cutaneous edge. Dilating the os uteri causes a similar result. Dilating an old urethral stricture with metal instruments caused at first a rise in the blood pressure, this rise being subsequently followed by a fall to a much lower level. Operations for fistula in ano when the sphincter is divided cause very irregular rises and falls in the blood pressure.

More severe and prolonged operations upon the rectum, such as excision for carcinoma, cause a fall in the blood pressure. In one case the pressure fell from 175 millimetres of mercury previously to operation to 110 millimetres of mercury at the end of the operation. In another case of excision of part of the rectum for a large papilloma the blood pressure fell from 150 to 115 millimetres. During an operation for the removal of cancerous glands from the neck in which the glands were found to be fixed to the carotid sheath and vagus the blood pressure fell from 155 to 110 in ten minutes while the glands were being exposed and dragged upon. During an amputation through the thigh for sarcoma of the knee in a man, aged 56 years, the blood pressure fell from 135 to 90. Prostatectomy in a patient, aged 60 years, caused at first a rise in the blood pressure from 190 millimetres of mercury to 245 and subsequently a fall to 100 millimetres of mercury (see Fig. 7). During an operation for excision of the shoulder-joint for an old fracture-dislocation in a woman, aged 58 years, where considerable difficulty was experienced in getting out the head of the bone, a fall in the blood pressure from 160 previously to operation to 95 was noticed (see Fig. 8).

FIG. 5.



Amputation of the breast with pectoral muscles and axillary glands in a woman aged 48 years. Chloroform was administered with a percentage inhaler, not more than 2 per cent. at any time. Traction on the brachial plexus led to sudden collapse, pallor, shallow respiration, and a great fall in blood pressure. There was a slight degree of shock present at the end of the operation.

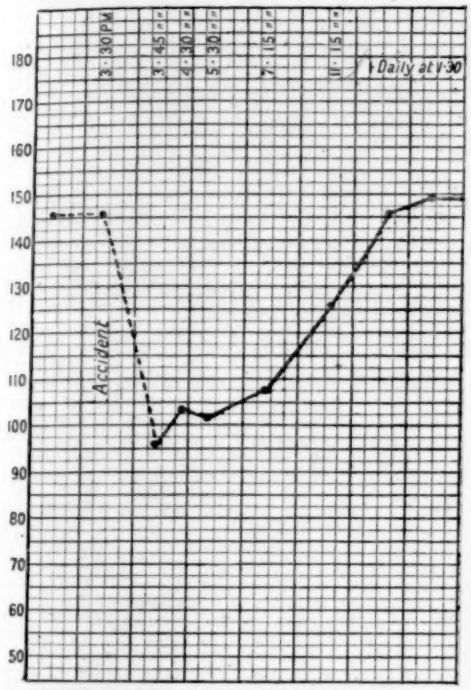
[27] An Experimental Investigation of the Rôle of the Blood Fluids in Connexion with Phagocytosis, A. E. Wright and S. R. Douglas, Proceedings of Royal Society, 1904, vol. lxxii., p. 357, and vol. lxxiii., p. 128.

[28] Sclavo's serum can be obtained from Elia Coli, chimico-farmacista, Siena, price 2 francs per tube of 10 c.c. Messrs. Martindale and Messrs. Allen and Hanburys also keep a supply.

[1] Lecture I. was published in THE LANCET of March 18th, 1905, p. 696.

In operations upon the abdomen the degree of shock produced depends very much upon the area of peritoneum exposed and the duration of the exposure. Generally speaking, operations upon the abdomen are more liable to cause shock than operations upon other parts of the body. Operations upon the upper portions of the abdomen, such as the

FIG. 6.



Moderate shock due to a fall from a burning house in a man aged 49 years. Severe burns and fractured thigh and forearm. Recovery from shock without treatment in less than 24 hours. The dotted line indicates the probable pressure previous to the accident.

stomach, duodenum, &c., cause relatively more shock than operations in the lower parts near the pelvis. The shock seems to depend upon the injury to, or exposure of, the peritoneum. Any form of manipulation of the peritoneum, such as traction upon it, sponging, flushing with hot water, and even exposure to the air alone, causes a fall in blood pressure which, if the cause be continued, is progressive. Interference with the mucous membrane of the intestinal tract does not seem to affect the blood pressure. Operations such as colotomy and appendicectomy, where only a small portion of peritoneum is exposed, do not cause much alteration in blood pressure.

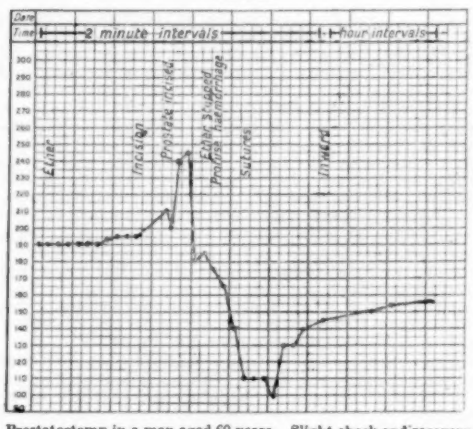
I have made a number of observations on the blood pressure during abdominal operations and the charts generally show well-marked but irregular rises in the blood pressure as the result of the different manipulations during the first stage of the operation. This stage varies in length according to the nature of the operation and the condition of the patient previously to operation; in some cases it was ten minutes; in others half an hour or longer. During the next stage the pressure fell below its original level though slight temporary rises in the blood pressure were observable as the result of manipulation; the general tendency, however, was towards a fall. The next and third stage, which was only seen in very severe operations, was marked by a steady and progressive fall in the blood pressure; any manipulation at this stage, such as would cause a rise in the pressure during the earlier stages, caused a fall which was often sudden, or if a rise in the pressure resulted, it was immediately followed by a fall to a much lower level. In operations upon the upper part of the abdomen such as the stomach and the gall-bladder the tendency was often towards a fall in the blood pressure almost from the commencement of the operation. During the operation of cholecystotomy in an elderly man I observed a fall in the blood pressure from 165 to 125 during the first 15 minutes of the operation. The application of hot sponges to the peritoneum or flushing the peritoneum with hot water usually caused a sudden rise in the blood pressure. In the later stages of the operation, however, it sometimes caused an equally sudden fall.

Turning the intestines out of the abdomen is in all cases followed by a sudden and often dangerous fall in the blood pressure. In one case I saw a patient who was suffering from shock become pulseless and die almost immediately after the intestines had been turned out of the abdomen to get at an obstruction in the colon. In a case of laparotomy for tuberculous peritonitis in a child Cushing observed a fall in the blood pressure from 112 to 70 result from partial evisceration; returning the bowels into the abdomen caused the pressure to rise at once to 90. Evisceration and extensive intra-abdominal manipulation, especially in the upper regions of the abdomen, are always followed by a very marked fall in the blood pressure. There is not sufficient evidence at present to say whether this fall in blood pressure is caused by a reflex effect upon the vaso-motor centres in the medulla as the result of sensory stimuli from the peritoneum or whether it is due to direct insult to the vaso-motor nerves in the splanchnic area. There is no doubt, however, that these procedures in the course of an abdominal operation are very apt to result in shock and may cause fatal collapse in a patient already suffering from that condition.

The influence of age upon the development of shock.—In elderly patients a very high initial blood pressure is generally observed, the sphygmometer reading often being between 150 and 170. This is largely accounted for by arterio-sclerosis. In such patients a fall in the blood pressure to a point a little below the normal blood pressure for an ordinary adult may cause shock and in such a patient severe shock may be present with a recorded pressure of 90 or 100 millimetres of mercury. Shock seems to be developed more easily in elderly patients but so far as I have been able to ascertain the difference is not great. As one would expect, recovery from shock appears to be slow in elderly patients. It is noticeable that much greater variations in blood pressure occur during operations upon elderly patients than in young adults. This seems to show that the blood pressure is not under such complete control or, in other words, that with advancing age compensation for variations in the blood pressure tends to become imperfect.

Shock is always supposed to develop much more readily in children as the result of operation than in adults and shock

FIG. 7.



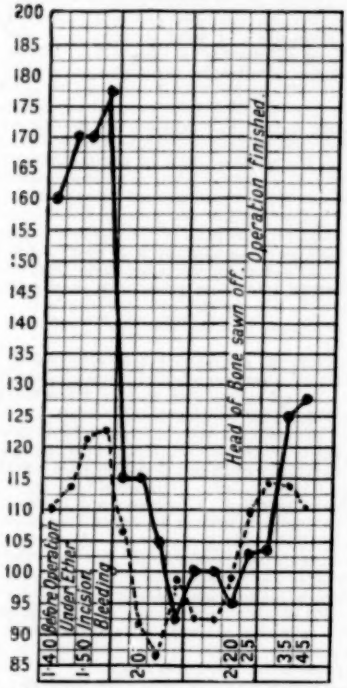
Prostatectomy in a man aged 60 years. Slight shock and recovery. (Janeway.)

is the chief risk of severe operations in children.[28] Blood-pressure charts taken during operations upon children show that the pressure is very well sustained during the early stages of the operation but that these stages are much shorter in point of time. So that the terminal stage of exhaustion of the centres is reached much earlier in children

than in adults. The whole question in fact is one of time. Children have not any special liability to develop shock. And if the time which is occupied in performing the operation is reduced in proportion to the youth of the child I do not think that children are any more liable to develop shock as the result of an operation than adults.

The effect of the anæsthetic.—The influence of the anæsthetic upon the blood pressure during a long operation is very

FIG. 8.



Excision of shoulder for old fracture and dislocation in a woman, aged 58 years. Considerable bleeding and much traction necessary to get out the head of the bone. The high initial pressure is due to arterio-sclerosis.

marked and the two anæsthetics in common use vary very widely in their effects upon the blood pressure. Ether anæsthesia causes a rise in the blood pressure in almost all cases. There is a marked rise in the blood pressure in the early stages of ether anæsthesia and the net result of all the investigations into the effect of ether anæsthesia upon the blood pressure shows that it tends to remain at its normal level or to be raised slightly throughout the whole period of ether anæsthesia, any fall in blood pressure which occurs during an operation being due to the steps of the operation and not due to the anæsthetic. Thus Cook and Briggs came to the conclusion that a fall in blood pressure never occurred during ether anæsthesia unless some cause apart from the anæsthetic was present. Blauel in 100 observations found a rise in blood pressure present throughout the whole period of ether anæsthesia in 79 per cent. and a fall in only 12 per cent., in most of which other causes were present. In my own series of charts of operations it seems that the effect of ether anæsthesia is towards a rise in the pressure.

With chloroform anæsthesia the results are almost the exact opposite of those with ether anæthesia. It has always been said by London surgeons that ether anæsthesia is safer in long operations and those where shock is anticipated than chloroform anæsthesia. This fact previously based upon clinical observation is proved beyond all shadow of doubt by blood-pressure records of operations. Chloroform anæsthesia is accompanied by a fall in blood pressure during the whole period of anæsthesia. The effect of chloroform upon the blood pressure is very striking indeed; a fall often to quite a considerable extent almost always follows its administration. In fact, it seems as if chloroform has a direct toxic influence upon the vaso-motor centres and produces by its action upon these centres a fall in blood pressure from lowered peripheral resistances.

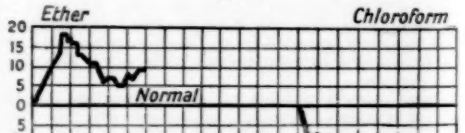
My own observations upon blood pressure, which have been carried out entirely with the object of elucidating the subject of shock, have incidentally led me to the belief that many, if not all, of the accidents which occur with chloroform are due to the effects of that drug *not* upon the respiratory centre and not to the effect upon the cardiac centres but are directly due to the toxic effects of the drug upon the vaso-motor centres. It so happened that on one occasion I was taking readings of the blood pressure of a patient who was being operated upon for piles. The patient struggled during the early stages of the operation and the anæsthetist changed from ether to chloroform. The patient was breathing very deeply at the time and the result no doubt was that a considerable overdose of chloroform was given. Four minutes later the operation was finished and the anæsthetic was stopped. Beyond the fact that the patient was deeply anæsthetised there were no alarming symptoms, but I found that the blood pressure had fallen to an alarming extent and during the following two minutes the respirations stopped and the patient became pulseless. Vigorous artificial respiration happily restored the patient. In this case I was able to observe that the blood pressure had fallen to a dangerous level some time before symptoms of chloroform poisoning developed.

The effects of chloroform in lowering the blood pressure have been demonstrated by Crile, by Duploy and Haillion, and by Remedi upon animals, and upon man by Blauel, Kapsammer, and numerous other observers. Blauel found a marked fall in blood pressure in 69 per cent. of cases of chloroform anæsthesia. Blauel's chart shows the relative results of the two anæsthetics in tabular form. (See Fig. 9.) My own observations seem to show that shock develops much sooner in those operations where chloroform anæsthesia is used than in those where it is not used.

There can, I think, be no doubt that shock is more likely to develop and will develop more rapidly in operations performed under chloroform anæsthesia than in operations performed under ether. I believe, moreover, that the so-called gas-ether-chloroform sequence for long and dangerous operations is a mistake, as it results in chloroform being administered at just that period of the operation when the maintenance of the blood pressure is all important. In operations upon the stomach and other abdominal operations where there are serious objections to ether anæsthesia on account of its liability to cause vomiting and to set up lung complications the C.E. mixture is certainly the best substitute from the point of view of subsequent shock. Blood-pressure charts taken during such operations where the C.E. mixture has been used show that the blood pressure is well sustained.

Time.—This has a most important bearing upon the development of shock. If one examines the blood-pressure charts of patients during an operation the effect of time upon the fall in blood pressure is unmistakeable. The onger the operation the greater the fall; this applies to

FIG. 9.



Blauel's chart of results upon the blood pressure caused by anæsthetic narcosis for at least 50 minutes, calculated from 25 cases of ether and 18 of chloroform anæsthesia, all the subjects being over 20 years of age.

every kind of operation and in the more severe operations the element of time can be seen to be a very important factor.

In the pre-anæsthetic days speed in operating was of extreme importance and the great surgeons of those days depended very largely upon their ability to operate rapidly for the success of their operations. After the general use of anæsthetics and the development of aseptic methods of operating the pendulum swung the other way and great care and minute attention to detail were considered of more

importance than the speed of an operator. Now the pendulum is swinging back and we are realising that speed is still of importance. In the more severe operations in which shock has to be reckoned with, every minute during which the operation is prolonged increases the risk of shock. We see this particularly in children; they will not stand prolonged operations, though they stand even severe operations well and recover rapidly if the operation is quickly performed.

It is a well-known fact that symptoms of shock frequently do not show themselves until some time after an operation; often not for several hours after the patient has been taken back to bed. This form of shock which develops some hours after an operation is frequently seen in children. This phenomenon can be seen very well if a chart of the blood pressure is kept. The chart usually shows that the blood pressure is dangerously low at the end of the operation, though there may be no symptoms of shock. The pressure, however, instead of rising again remains at the low level or slowly falls still lower. When the patient is in this condition the least thing may be sufficient to cause a dangerous or fatal fall in the blood pressure. In this exhausted condition of the nervous system afferent nerve impulses of any sort tend to lower the blood pressure instead of raising it, and acting in this way the pain and restlessness which so frequently accompany the post-operative period of returning consciousness probably act as the exciting cause of the ultimate breakdown of the vaso-motor system.

Cushing has pointed out that the blood-pressure charts clearly show that the weak pulse which is seen under these conditions is best stimulated by small doses of morphine to stop the inflowing sensory impulses. Blood-pressure charts are of considerable value, as they enable us to anticipate this condition of post-operative shock and we can thus by the adoption of suitable measures often avoid its development.

The condition of the patient prior to operation.—This has always been recognised as an important factor in the causation of shock. The physical factors in the patient's condition which are the most important as tending towards the production of shock are conditions in which the activity of the nerve centres tends to be lowered. Thus patients who are recovering from illness or who are at the time of operation suffering from illness are much more liable to develop shock than those in vigorous health. We see this in patients operated upon for perforation in typhoid fever.

It is often very difficult to estimate the condition of a patient with regard to his power of standing severe operative procedure. Thus often a weakly-looking individual who looks as if he would not stand a severe operation well stands it quite well and *vice versâ* I think this is accounted for by the fact that a person of poor physique who leads a strenuous life has often much more highly developed nerve centres than one of robust physique who leads a life of ease and indolence which makes but slight calls upon his nerve centres for great or sudden activity. The mental condition of a patient prior to operation has a considerable influence upon the development of shock, though it is difficult to see why this should be so on physiological grounds. There is no doubt, however, that patients who dread an operation and who are in a state of considerable mental anxiety before the anæsthetic is administered are more liable, other things being equal, to develop shock than those whose mental equilibrium is undisturbed.

Conditions which accompany shock.—As has already been pointed out in considering the physiology of shock, it is only to be expected that in severe conditions of shock where the blood pressure has fallen to a level at which the circulation is inefficient there must be a profound change in the functional activity of every organ and tissue in the body.

Temperature.—Several observers have attempted to prove that some of these conditions which accompany shock are the cause and not the result of that state. Thus Kinnaman, arguing from experiments upon dogs, says that the fall in bodily temperature which accompanies shock is the cause and not the result of the fall in blood pressure. He argues that shock is always accompanied by a fall in body temperature and that in shock a rise in body temperature is followed by a rise in blood pressure and amelioration of symptoms. I think, however, that it is much more reasonable to consider the fall in body temperature as a secondary condition to the fall in blood pressure.

Kinnaman has demonstrated by a series of careful experiments that if an animal is killed by prolonged exposure of the intestines the body temperature (as ascertained by a thermometer in the rectum) falls continuously till the death of the animal. This fall in temperature occurs together with the fall in blood pressure and he found that both the temperature and the blood pressure are raised by immersion in a bath a few degrees warmer than the animal. Immersion of the animal in water will, however, raise the blood pressure quite independently of the temperature by increasing the outside pressure. He also failed in his experiments to take into account the alteration in the specific gravity of the blood which follows from exposure of the intestines and which must be a very important factor in such experiments.

There can be no doubt that in cases where shock results from exposure of the intestines the fall in body temperature which must result from exposure of so large an area of peritoneum is an important factor in hastening a fatal issue though it does not follow that it has any direct influence in the causation of the condition we know as shock. These experiments clearly show that a rapid fall of temperature which is steadily progressive follows exposure of the peritoneum to the air and that this lowering of the body temperature helps to hasten the subsequent complete breakdown of the circulation.

The lowering of the body temperature which occurs in cases of shock resulting from operations or injuries in which the peritoneum is *not* exposed is probably entirely secondary to the deficient circulation resulting from the fall in blood pressure, except perhaps in cases where a large wound area is exposed.

Secretions.—In conditions of shock all the secretions of the body are either arrested or markedly decreased. Many of the secreting glands, notably the salivary glands, depend for their secretive activity upon a high local pressure in their capillaries and if this pressure fails secretion is arrested. The intense thirst of patients suffering from shock has probably two causes: first, dryness of the mouth resulting from arrested secretion in the salivary glands; and, secondly, a physiological call for fluid by the tissues. Partial anuria always occurs in shock and complete anuria is not uncommon. This is accounted for by the lowered blood pressure.

Diabetes.—It is a well-known fact that diabetes may follow shock, whether the shock be produced by severe injury or by operation. The diabetes often is not noticed for some weeks after the injury, though glycosuria has often been noticed within a few hours. It is certainly not yet proved that diabetes occurring under these conditions has any direct relationship to shock. The association of circumstances would appear to indicate some connexion, but until further evidence is forthcoming I must be content with merely stating the fact. Mark R. Taylor reports a case of a strong healthy labourer who developed symptoms of diabetes 16 days after an operation for strangulated hernia.

Consciousness.—In syncope loss of consciousness is the rule but in shock there is usually no impairment of consciousness. In collapse impaired consciousness may occur but this depends entirely upon the rapidity of the fall in blood pressure. If the blood pressure falls slowly and there is no sudden alteration in the intracranial pressure consciousness is not altered, but if the fall is sudden unconsciousness and often other cerebral effects are seen.

TREATMENT OF SHOCK AND COLLAPSE.

The percentage of deaths from shock following major operations.—In order to try to ascertain the percentage of deaths from shock following the major operations of surgery at the present day I have analysed the cause of death in 200 cases at one of the large London hospitals. For this purpose I took 200 consecutive cases of death following upon an operation and analysed the cause of death as accurately as possible. It was not possible in many cases to be quite certain that the patient had died from shock, but I assumed shock to have been the cause of death, as I have little doubt that it was, in those cases where death resulted upon the table or soon after the operation, or within the first 24 hours following upon the operation except where the operation had been performed for conditions which might of themselves prove fatal apart from shock—i.e., such cases as general peritonitis or acute appendix abscess, meningitis, empyema, &c., these cases were all excluded. The cases included as shock were such as intestinal anastomosis, reduction of dislocated hip, splenectomy, amputation of the hip, ruptured bladder, removal of a cerebral tumour, &c. No doubt several cases were included which did not die from

shock; on the other hand many cases which die from shock do not die within the first 24 hours and in many cases where death follows quickly after an operation for general peritonitis or appendix abscess shock is the main cause of death, so that, on the whole, I am inclined to think that the figures give a very fair estimate of the percentage of death from shock and that, if anything, the result is too low rather than too high. Taking the minimum figure I found that there were 42 deaths out of the 200 which could be attributed to shock; or, in other words, 21 per cent. of the deaths following operations were either directly due to shock or shock was an important contributory factor in causing death. This shows, I think, that there is still a great field for the treatment or prevention of shock in lowering the mortality from the more severe operative procedures.

METHODS OF TREATING SHOCK.

Methods which simply treat symptoms.—Under this head I include treatment which has for its object keeping the patient warm by artificial means, the use of warm or stimulant enemata, the administration of alcohol or other stimulants, &c. Such treatment is based entirely upon the relief of symptoms and does not take into account the causes of the condition. The importance of keeping the patient warm is strongly insisted upon by most writers upon this subject and is one of the principal methods of treating shock advocated by many text-books. As I have already mentioned, in abdominal operations exposure of a large area of peritoneum for any length of time causes a considerable lowering of the body temperature and it is therefore important after such operations to attempt to compensate for this loss of heat by the application of external warmth.

The application of heat has, however, but little influence upon the blood pressure and certainly does not tend to raise it, except in so far as recovery of the vaso-motor centres will probably occur more readily if their blood-supply is at the normal rather than at a subnormal temperature. The application of external heat to the patient when it is carried to the extent of making him break into a profuse perspiration, as one not infrequently sees, is probably harmful, as it tends to lower the blood pressure by causing vaso-dilation of the peripheral blood-vessels.

The use of stimulants.—This has hitherto been one of the most popular methods of treating shock in almost all degrees of that condition. During the time that I was house surgeon I had considerable opportunities for watching the effects of treatment in cases of shock from different causes. The opportunities of seeing cases of shock which a house surgeon possesses are not easily obtained afterwards. Cases of shock either following operations or severe injuries or burns are constantly occurring in any large hospital but it is only the house surgeon who really is able to watch these cases constantly. During the period in which I acted in that capacity I was able to observe a large number of cases and one thing that struck me forcibly was the very disappointing results of stimulants, especially strychnine. In severe degrees of shock when the patient's circulation had almost failed hypodermic injections of strychnine, whether given in small or large doses, seemed in most cases to produce no effect. Thinking that the reason why strychnine had so little effect upon the circulation in bad cases of shock might be that owing to the deficient circulation it never reached the nerve centres I tried injecting it directly into the veins but in all cases the effect was the same—little or no improvement in the circulation resulted.

In lesser degrees of shock the effect of strychnine was more marked, the blood pressure being rapidly raised and marked improvement being apparent. I say apparent because as a rule the patient generally relapsed into a more severe degree of shock as soon as the effects of the drug had passed off. The most noticeable fact was that the more severe the degree of shock from which a patient was suffering the less was the effect of administering strychnine. Now it was at once obvious that this was just the reverse of what one would expect to find if strychnine really acted beneficially in the treatment of shock. In many of the cases where strychnine had entirely failed to improve the patient's condition I observed that a very marked improvement followed saline infusion into the veins. This showed that it was still possible to raise the blood pressure though strychnine was useless. At that time an article appeared by a distinguished surgeon in which the administration of strychnine hypodermically in large doses (from 20 to 30 minims of the liquor) was advocated in such cases. This was tried. The same effects, however, were observed—that is to say, in minor degrees of shock a marked result followed the injection, often resulting in great excitement or twitchings, but in the major degrees the result was the same as from the smaller doses—that is to say, there was none, except that in a few instances in which the patient subsequently recovered from the shock very pronounced symptoms of poisoning by the drug developed many hours after its administration. From the observation of a large number of cases I became quite convinced that strychnine was of very little value in the treatment of shock and that in many cases it directly contributed to a fatal issue. Alcohol also appeared to be equally valueless. At that time I was quite in the dark as to the reason for this and was going simply upon the results of clinical observations. Since the use of the sphygmomanometer to register blood pressure accurately in millimetres of mercury, however, the explanation of these clinical observations has become clear. Previously to the use of this instrument there was one fallacy which was very misleading in judging the effects of stimulants. The patient's condition was judged by feeling the character of the pulse and an increased flow through the artery gave the impression that the blood pressure had been raised. After the administration of alcohol especially, the pulse is often much more easily felt and one is led to suppose that the blood pressure has been raised. By observing the blood pressure with the sphygmomanometer after the administration of alcohol to a patient or to myself I have found that the blood pressure instead of being raised is actually lowered and that the apparent improvement in the pulse is due to vaso-dilation and an increased flow through the vessel.

Crile's recently published work upon the effects of stimulants administered to animals both in the normal condition and when reduced to different degrees of shock has entirely altered our views as to the use of stimulants. He found that in the normal animal the effect produced by the intravenous administration of alcohol upon the blood pressure was not great; the most constant result was a fall. There was no evidence that the heart beat more forcibly. In animals suffering from varying degrees of shock the effect of alcohol was to cause a still further fall in the blood pressure, the amount of the fall depending upon the size of the dose. Alcohol, in fact, increased the shock present and the more profound the degree of shock the greater was the decline in the blood pressure which followed its administration.

Strychnine.—In small doses strychnine produced very little effect upon the blood pressure in a normal animal. In large doses it produced a marked rise in the blood pressure and the blood pressure was maintained at a high level for a considerable time. A second dose was followed by a similar rise in the blood pressure usually not so high and not continued for so long. A third dose was followed by a slight rise and the effect passed off very quickly and on repeating the dose a point was soon reached when no effect at all was produced. After each dose the blood pressure fell to a lower level than before the injection and when the point was reached at which no effect followed the administration of strychnine the blood pressure had reached a very low level and the animal was in a condition indistinguishable from that of profound shock produced by traumatism.

Crile proved that the repeated administration of strychnine to a normal animal produced a condition of profound shock in every way comparable to that produced by traumatism, that this effect could be produced without causing convulsions, and that it was due to exhaustion of the vaso-motor centres from excessive stimulation. He proved that it was not due to any effect on the heart by first dividing both vagi and accelerants. Crile subsequently found that the quickest, easiest, and most certain method of producing shock in an animal for experimental purposes was by the administration of strychnine.

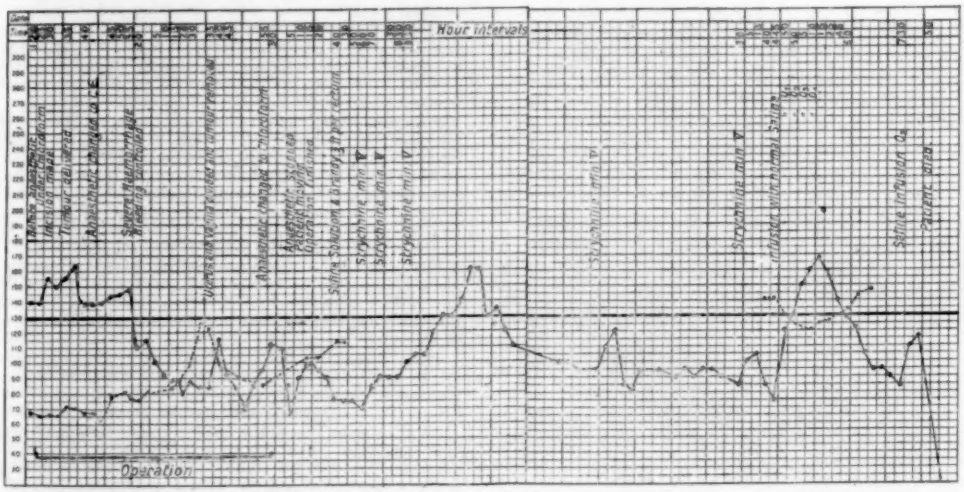
In animals suffering from shock the administration of strychnine caused a rise in the blood pressure which was proportional to the degree of shock. That is, if the degree of shock was slight there was a marked temporary rise in the blood pressure but if severe strychnine produced no effect. In all stages of shock the animal passed into a deeper degree of shock as soon as the effects of the strychnine had passed off. M. Roger has made a similar observation upon frogs. He found that if strychnine is injected into the veins of a frog no effect is produced if the animal is in a

state of shock. With the sphygmomanometer the same facts may be observed clinically in patients suffering from shock. In the case of an elderly woman who had had an enormous fibroid uterus removed and who developed severe shock after the operation I was able to observe the results of the administration of strychnine. It was noticeable that just after the operation when the patient was in a dangerous condition brandy produced, if anything, a fall in the blood pressure. An injection of five minims of strychnine produced only a very slight rise and a repetition of the dose produced no effect at all. During the next four hours the patient recovered somewhat and the strychnine that had previously been administered produced a very considerable rise in the blood pressure and a third dose given a little later produced a rise to above the patient's normal level. Some hours later the pressure again fell and strychnine then produced only a slight rise. The patient gradually sank into a deeper condition of shock and an injection of strychnine of ten minims then only resulted in a very slight rise, the pressure very quickly falling to a level below that previous to the injection. The patient was then infused intravenously with saline solution and the blood pressure rose rapidly to a point considerably above the normal, only, however, to fall again in the course of the next two hours and the vaso-motor centres as it tends to increase and to hasten exhaustion of the vaso-motor centres. The administration of strychnine in shock is like beating a dying horse, it may call forth an effort if we beat hard enough but it hastens the end. And I am convinced that many a case of post-operative shock is rendered hopeless by the administration of this powerful drug which, but for the use of strychnine, might have recovered.

In the treatment of collapse such as would result from a severe hæmorrhage strychnine may be of value. When the blood pressure has fallen as the result of hæmorrhage to a level equal to that of profound shock the administration of strychnine in therapeutic doses causes a rise in pressure which is well sustained. In collapse the vaso-motor centres are not exhausted and consequently strychnine will raise the pressure by stimulating these centres to increased activity. We have thus an interesting contrast between the effects of strychnine in shock and in collapse. Saline intravenous infusion is, however, a better and more reasonable method of treating the collapse resulting from hæmorrhage as it directly combats the cause of the fall in blood pressure.

Digitalis.—In his experiments upon animals Crile found that digitalis caused a slight rise in the blood pressure when injected into an animal suffering from profound shock. The animals which were treated with digitalis, however, did

FIG. 10.



The continuous line indicates blood pressure and the dotted line pulse rate. Abdominal hysterectomy for an enormous uterine fibroid in a woman aged 55 years. Shock developed during the operation and the patient subsequently died from shock. The operation lasted nearly two hours. Strychnine produced no effect on the blood during shock of operation but a considerable rise resulted as the patient recovered. A subsequent administration of strychnine produced only a slight response and a third administration had little or no effect. At this stage intravenous infusion raised the blood pressure to above the normal level.

being completely exhausted, death ensued (see Fig. 10). I think there can be no doubt after an examination of this chart that the administration of strychnine in this case contributed to the fatal result by stimulating the exhausted vaso-motor centres and so preventing their recovery. This case is of considerable interest as it shows that even when the vaso-motor centres are so exhausted that a large dose of strychnine calls forth no vaso-constrictor response the blood pressure could still be raised by saline infusion to a point far above the normal level.

I know that these views with regard to the use of strychnine in the treatment of shock are opposed to accepted opinion and are contrary to the teaching of many able and experienced surgeons. It is not a question of opinion, however, but of facts capable of proof. It is only recently that it has been possible by careful observations upon the blood pressure to see the exact effects of stimulants in the treatment of shock. The experiments of Crile and the clinical facts which I have produced, together with the knowledge of the way in which strychnine acts and the physiology of the causation of shock, render it possible to draw only one logical conclusion—namely, that in all conditions and degrees of true shock strychnine is not only useless but directly harmful, not live any longer than the control animals and he came to the conclusion that digitalis was of little value.

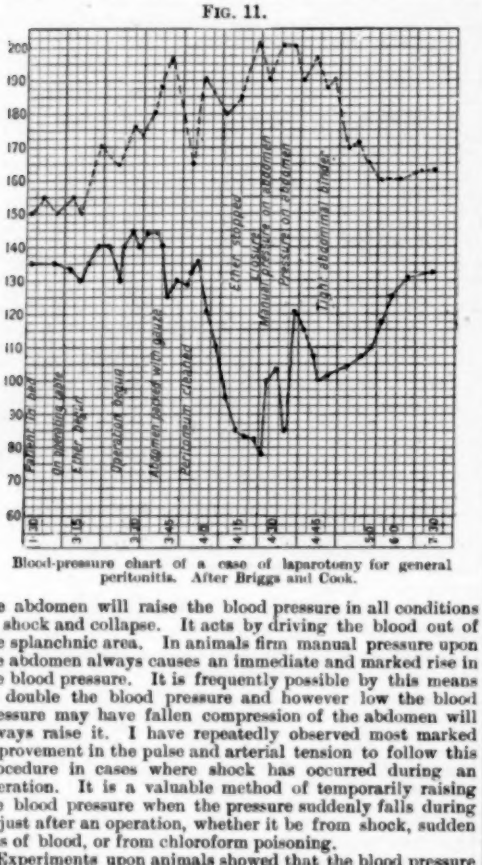
METHODS WHICH MECHANICALLY RAISE THE BLOOD PRESSURE.

Position.—It has been proved both by experiments upon animals and by observations upon man with the sphygmometer that position has a very marked effect upon the blood pressure. The best position is undoubtedly that usually advocated with the foot of the bed raised upon blocks and the head of the patient lower than his buttocks. This position tends to prevent the blood from accumulating in the abdomen and the lower limbs and assists the blood to flow from the great veins into the heart. This position raises the blood pressure in the essential part of the circulation—that is, in the great vessels and the brain—both in a normal individual and in a patient suffering from shock. Moreover, this is the position in a normal individual in which the highest blood pressure is found associated with the lowest pulse-rate; indicating that this is the position in which the blood pressure is most easily maintained at a high level. This was first demonstrated experimentally by Alexander Hill both

in animals and upon man. It has since been confirmed by other observers, more especially by Stephens whose experiments upon 22 medical students I have already referred to. This position with the foot of the bed well raised (it should be raised at least a foot) is of the greatest value in combating shock and all patients suffering from shock should be nursed in this position until the blood pressure has once more returned to the normal level of health. I believe further that dangerous shock may often be warded off by placing patients after any severe operation in this position. At the North Eastern Hospital for Children it is the practice always to raise the foot of the cot of any child who has undergone any severe operation, whether shock is present or not, and I believe this to be very good routine practice. Once a patient suffering from shock or collapse has been placed in this position with the head down it is most important that his position should not be altered suddenly, as, for instance, by raising him for the administration of nourishment, &c., as the sudden alteration in blood pressure may result in a dangerous syncope; this has several times been observed. This is also one of the dangers of the Trendelenburg position. The act of lowering the patient into the horizontal position after an operation in which the Trendelenburg position has been used may result in a dangerous fall in blood pressure.

Compression of the abdomen.—Simple manual pressure upon

FIG. 11.



Blood-pressure chart of a case of laparotomy for general peritonitis. After Briggs and Cook.

the abdomen will raise the blood pressure in all conditions of shock and collapse. It acts by driving the blood out of the splanchnic area. In animals firm manual pressure upon the abdomen always causes an immediate and marked rise in the blood pressure. It is frequently possible by this means to double the blood pressure and however low the blood pressure may have fallen compression of the abdomen will always raise it. I have repeatedly observed most marked improvement in the pulse and arterial tension to follow this procedure in cases where shock has occurred during an operation. It is a valuable method of temporarily raising the blood pressure when the pressure suddenly falls during or just after an operation, whether it be from shock, sudden loss of blood, or from chloroform poisoning.

Experiments upon animals showed that the blood pressure can always be raised during shock by compression of the abdomen and that in some cases the pressure does not again fall to its original level but remains higher than before the compression. The application of a tight abdominal binder acts in the same way and is at the same time a simple and effective method of raising the blood pressure during shock. I have seen great improvement in the patient's condition follow the application of a tight abdominal binder and if care is taken in its application to avoid compressing the chest and so embarrassing the respiration it is a most useful method of treatment, especially in abdominal cases (see Fig. 11).

Crile tried a number of experiments upon dogs to test the value of pressure in the treatment of shock. The animal was placed, after it had been reduced to a condition of shock, into a pneumatic tube and the pressure of the air in the tube was then raised. He found that in this way he had absolute control over the blood pressure in all conditions of shock. The blood pressure of an animal suffering from shock could in this way be raised to the normal level and kept there. Animals suffering from profound shock and treated in the pneumatic chamber lived longer than similar animals not so treated.

Arguing from these experiments and from the known physiology of shock, Crile attempted to treat human beings in the same way. For this purpose he had a pneumatic suit made in which the patient could be placed. This suit was so constructed that it enveloped the whole body except the head and chest and could be inflated by a foot pump. A uniform pressure was in this way exerted upon the whole body surface, constituting, in fact, an artificial peripheral resistance. He found that with this suit the blood pressure of a patient could be controlled within a range of from 25 to 75 millimetres of mercury. He was able with this suit to raise the blood pressure of a patient suffering from shock to a safe level and to keep it there while the operation was finished or afterwards until the vaso-motor centres had recovered. The suit was gradually deflated, the patient's pressure being meanwhile watched with a sphygmometer. It was found possible with this suit to maintain the blood pressure at a safe level for as long in one instance as 12 hours.

One case is worth quoting: it was that of a patient whose arm and shoulder had been mangled in a railway accident. On admission to the hospital the patient was in a condition of deep shock and on administering an anæsthetic for the purpose of amputating the arm the blood pressure fell and the radial pulse disappeared. The pneumatic suit was then put on and inflated. By this means the blood pressure, which had previously fallen to nothing, was rapidly raised to the normal pressure and maintained at that level during the operation for removal of the arm and the patient recovered. The results obtained by Crile with the use of this rubber suit afford a very striking proof of the physiological cause of shock.

This method of treating shock by raising the external air pressure and so substituting an artificial peripheral resistance for the lost peripheral resistance caused by the exhaustion of the vaso-motor centres promises to be of great clinical value and to be the most effectual method of treating that condition. Unfortunately it cannot yet be said to be a practical method. I should like to have been able to make some investigations with a pneumatic suit but the difficulties in the way are numerous and one item of no little importance is the cost of the necessary apparatus. The experiment was made by Crile at the Lakeside Hospital of building a pneumatic chamber in which patients suffering from shock could be placed and the atmospheric pressure raised. It had to be abandoned, however, owing to mechanical difficulties. Air chambers in which the air pressure can be raised to a considerable number of atmospheres and which are provided with air locks for entry and exit are now used for the treatment of workmen suffering from too rapid decompression on leaving the caissons where they work under high air pressure in the building of bridges and tube railways. These pressure chambers, or medical locks as they are called, are used, I believe, in most places where tunnelling under high atmospheric pressure is in progress. I do not think, therefore, that it would be impossible to construct a chamber or small ward in which the pressure could be raised to the necessary extent, provided with an air lock for entry and exit, and in which patients suffering from shock after severe operations or after burns or other injuries could be treated. Many lives might possibly be saved at a big hospital provided with such a ward. No doubt the money necessary for the construction of such a ward on the lines of the medical locks provided for workmen by the big engineering companies would be considerable and there would be numerous constructural difficulties. Some day, perhaps, such a ward may be built and an opportunity afforded for testing its value in the treatment of patients suffering from shock and other conditions of lowered blood pressure.

ON THE RELATION OF THE PARASITIC PROTOZOA TO EACH OTHER AND TO HUMAN DISEASE.[1]

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IT is from the standpoint of an onlooker that I propose to-night to take a survey of the advances made during the past three years in our knowledge of the disease-producing protozoa. They reveal, in the first place, a surprising complexity of reproductive phenomena, and, in the second place, an equally surprising parallelism in the developmental cycle of forms which at first sight seem far removed. The protozoa, or one-cell animals, are divided into four classes: the rhizopods, the sporozoa, the flagellates, and the infusorians. The rhizopods are the lowest, comprising mainly amœbæ—shapeless masses of protoplasm. The only one of these which interests us to-night is amœba coli.

Many kinds of amœba occur in the human intestine. Just as the spores of many of the higher fungi, when placed in suitable nutritive conditions, pullulate in the form of yeast cells, and can only be distinguished from genuine yeast by a study of their development, so, of the many kinds of amœbæ occurring in the intestine, some are genuine—viz., the vegetative stage of rhizopods, whilst others are only amœboid stages in the development of higher forms, such as Trichomonas, Lamblia, and other infusorians. Genuine amœbæ are divided into those provided with a shell, Thecamœbæ, and those that are naked, Gymnamœbæ. At least one of the former and two of the latter sort are now known to occur in the intestine. With the representative of the shell amœbæ, Chlamydophrys stercorea (Cienkowski), and its complicated life-history we need not now concern ourselves, as its habit appears to be purely saprophytic. The two naked forms of amœbæ are genuine parasites. One of them is harmless and the other is one of the most dangerous of pathogenic protozoa. The former, which has hitherto been known as amœba coli (Lösch), has been re-named entamœba by Schaudinn. The second, hitherto called amœba dysenteriæ by such authors as admitted its existence, has been re-named by Schaudinn entamœba histolytica. Schaudinn[2] found out how to distinguish the harmless amœba from the dangerous one. Entamœba coli occurs very frequently in the fæces of healthy persons, as was first discovered by Grassi. It is a shapeless mass of protoplasm, not showing a well-marked distinction into clear ectoplasm and granular endoplasm and possessed of a large and distinct nucleus. The obstacle to finding it in the healthy fæces is that its habitat being in the upper regions of the colon its vegetative stages die out as the intestinal contents become firmer on their way down. If, however, their downward course be hurried, then the amœbæ can readily be detected. The amœbæ have two distinct cycles of development: one vegetative or asexual, taking place in the naked state, the other displaying a primitive but unmistakeable form of sexuality and occurring inside a capsule or cyst. In the vegetative form the amœbæ either simply split in two or their nucleus divides into eight daughter nuclei, each of which takes a portion of the protoplasm so as to form a characteristic brood of eight young amœbæ which come apart. In the other, or sexual cycle, the amœba rounds itself off, comes to rest, contracts, and surrounds itself with a gelatinous coat which becomes the cyst wall. The two nuclei, after undergoing reconstruction and chromosomic reduction, divide into halves which copulate so as to form two fresh nuclei, each containing half of the two parent-nuclei. Each of these copulation-nuclei now divides twice and the divisions form eight young amœbæ which, however, cannot leave their cyst until it has been taken in by a new host and has had its wall softened in the stomach and the duodenum. The resemblance in general outline to the developmental process of the sporozoa will be at once manifest: asexual swarming in the primary host till it is exhausted or conditions become unfavourable; then sexuality with cyst formation and change of host.

The vegetative stage of the pathogenic rhizopod entamœba histolytica differs from that of the non-pathogenic entamœba coli in, first, possessing a clear, tough, outside layer or ectoplasm which enables it to penetrate between the epithelial cells, and, secondly, in not possessing a distinct, well-defined nucleus. Its tough ectoplasm enables it to force its way into the deeper layers of the mucous membrane where it multiplies and forms the undermined ulcers so characteristic of tropical dysentery and readily distinguished from the diphtheritic appearance presented by the bacillary form of the disease. The two sorts of amœbæ differ also in their reproduction. The pathogenic form in its vegetative stage divides into two or forms new individuals by budding. Brood formation does not occur. The process of encystment is also quite different. It comes on when the patient is beginning to recover from his attack of dysentery and the fæces are becoming solid. The nucleus gives up most of its chromatin in granular form to the plasma and its remains are expelled. The plasma now projects from its surface a number of little knobs, each containing a particle of chromatin and measuring from three to seven micra in diameter. These break off after a while and each becomes surrounded by a capsule which ultimately becomes quite brown, hard, and opaque. These "spores" are then expelled with the fæces and serve to infect a fresh host.

In my presidential address delivered in 1901 before the Royal Academy of Medicine in Ireland I spoke of the rôle of amœbæ in the following terms: "The general conclusion to which I incline after a careful survey of the literature is that the amœba coli is in all probability either wholly or partially responsible for the causation of one form of dysentery—that termed 'tropical' and which is not endemic in this country." Subsequent investigation has borne out this view. One of Schaudinn's experiments seems quite conclusive. He allowed a small fragment of fæces from a case of dysentery contracted in China to dry in the air, suspended it in water, made a number of slide and cover-glass preparations, and by searching them systematically throughout on the mechanical stage he satisfied himself that they contained nothing resembling the cysts of entamœba coli but only the small brown spores of entamœba histolytica. There were no amœbæ, these having been destroyed by drying. The cover-glasses were then removed and the fæces washed off with clean water, made up to about one cubic centimetre, and administered with meat and milk to a young healthy cat, the fæces of which had been proved by careful examination to be free from amœbæ and their cysts. Three days afterwards the cat began to pass slimy fæces streaked with blood. These were found to be swarming with the typical entamœba hystolytica. Next day the animal died from dysentery. The necropsy showed characteristic ulceration of the large intestine with crowds of amœbæ in all stages of penetration into the intestinal wall. There were no cysts, the animal having died in the acute stage of the disease. In order to see whether the amœboid stage could propagate the disease Schaudinn administered large quantities of this fæcal matter to another cat. It remained quite healthy. Its fæces were examined for four weeks and no amœbæ were detected. It was then given a small portion of the same dried-up spore-containing fæces from the Chinese case that had been used in the other experiment. Within six days amœbæ appeared in the fæces. This cat developed dysentery and died from it in about a fortnight. From this it would seem that the disease is not propagated by amœbæ introduced per os. The older experimenters, from Kruse and Pasquale onwards, had often succeeded in producing infection by the introduction of amœbæ per rectum. This rectal transference can, however, hardly be realised under natural conditions and, accordingly, it is to the dried-up spore-containing fæces present in dust and water that we must look for the propagation of dysentery. Whether the amœbæ contained in the fæces from the acute stage will, if gradually dried, become converted into spores outside the body, or whether the amœbæ that are going on to spore formation receive their impetus along that track whilst still in the bowel, does not seem to be quite clear. In any case the practical importance of these observations is obvious. The spore-containing fæces of cases of dysentery must be prevented from getting access to drinking water or from being conveyed by flies and deposited on food.

The next class is that of the sporozoa, so called because at one stage of their life-history the individual breaks up

[1] Abstract of a paper read before the Epidemiological Society on Feb. 17th, 1905.
[2] Arbeiten aus dem Kaiserlichen Gesundheitsamte, Band xix., 1903.

into a number of minute reproductive bodies resembling the spores of fungi or mosses and, like them, often contained within a cyst or thick-walled capsule. Amongst the chief orders of this class are the gregarines, which mostly live in the intestines of crustaceans and insects; the coccidia, many of which inhabit the digestive tract and its annexes in mammals, birds, and various invertebrates (myriapods, &c.); and the hæmosporidia, or parasites of the blood corpuscles, which are the cause of malaria and to which, therefore, a very special interest attaches. All these organisms, however different their vegetative stages, have in common a certain ground-plan of life-history, though varying in individual cases and with regard to matters of detail. This life-history comprises two main features, alternation of generations and change of host. Alternation of generations means that a sexual method of reproduction alternates with an asexual method, whilst the term "change of host" does not, of necessity, imply a change of host-*species*, but in many cases only a change of host-*individual*. The general idea underlying the parasitism of these organisms is that once the sexually produced reproductive body, or spore, finds its way into a suitable host and into a suitable cell of that host—for they are intracellular parasites—it rapidly attains its full size and splits up without the intervention of sexuality into a number of fragments which fall asunder and, invading fresh cells of the same host, repeat the process. The host-animal thus becomes speedily pervaded by swarms of parasites and the resultant disturbance of function is the disease. After a time, owing to the production of specific antibodies or to the exhaustion of the reproductive power of the parasite under the strain of repeated asexual division, this process gradually ceases and specially differentiated male and female forms appear and copulate. The fertilised female forms a cyst containing spores, which have to be transmitted to a fresh host before they can develop. The points at which the greatest variability obtains are, first, the place and time of conjugation, and secondly, the arrangements for transfer from one host to another. Where the organism passes its asexual stage in the blood, transfer must necessarily be effected by the only agency whereby blood is at all frequently removed from the vessels—i.e., blood-sucking invertebrates, such as flies and ticks. The intermediate host of blood-inhabiting parasites is, therefore, an invertebrate blood-sucker. Some of the blood parasites—those of malaria, for example—avail themselves of the invertebrate host as the scene of their sexual reproduction and multiply enormously within it. Others, such as the trypanosomes of the mammalia, remain, so far as we are at present aware, quite passive within their cold-blooded host and use it merely as a vehicle. Others, again (some of the piroplasmata), in some mysterious way pass on into the eggs of the invertebrate host and infect its young brood. On the other hand, when the parasite passes its asexual stage in a cavity of the host that is connected with the outer world (the coccidia), the problem how to escape is comparatively simple, and an intermediate host may be dispensed with.

In order to characterise readily these several stages and to emphasise homologies, it is necessary to adopt a systematic nomenclature, and I accordingly use that elaborated by Schaudinn and Lühe, according to which

The name Schizont is applied to the mature asexual individual.	
,, Merozoites is applied to the pieces into which the Schizont splits up.	
,, Gametocytes is applied to the forms which produce or become converted into the sexual individuals:—	
viz., Macrogametocyte ...	The *asexually produced* individual which, by chromosomic reduction, becomes converted into a female;
and Microgametocyte ...	The *asexually produced* individual which, by chromosomic reduction and nuclear division, becomes converted into a *number* of males.
Gametes	The sexual individuals:
viz., Macrogametes ...	Females (the ova of the metazoa).
And Microgametes ...	Males (the spermatozoa of the metazoa, antherozoids of the higher cryptogams).
Zygote	The fertilised macrogamete.
Ookinet	The zygote when capable of locomotion.
Oocyst	The zygote when it has come to rest and is surrounded by a thick capsule.
Sporoblasts	Secondary cysts or spore bags formed within the oocyst.
Sporozoites	The final products of the act of sexual reproduction—minute bodies formed often in large numbers within the oocyst and which, on being removed to the new host, give rise to the schizonts.

The life-history of the parasites of human malaria, as established by the labours of Laveran, who discovered them; Golgi, who differentiated them into species; Ross and Manson, who discovered the change of host; MacCallum, who recognised their sexuality; and Grassi, who identified the mosquito, has been more fully worked out during the last three years and numerous important details have been added. Plasmodium vivax, the cause of tertian ague, has been minutely studied by Schaudinn[3] at an ague-stricken village near Rovigno on the Adriatic. Some of his observations regarding the sexual process are of special interest. It starts in from ten minutes to half an hour after the blood has been sucked in by the gnat. The microgametocyte, which is readily recognised by its hyaline plasma, large oval nucleus, and coarsely granular pigment, suddenly shoots forth from four to eight curved filaments, from 20 to 25 microns long and one micron at thickest. Meanwhile the macrogamete has been preparing itself for fertilisation by ejecting part of its nucleus. This process appears to be homologous with the extrusion of the polar bodies by the metazoan ovum. The number of chromosomes is thus reduced by one-half. The extruded matter may possibly, by its disintegration, provide a diffusible substance acting chemiotactically on the microgametes and causing them to approach the female, in the same way as the canal cells of the archegonium of ferns yield malic acid which attracts the antherozoid. The female then protrudes a "receptive eminence," and as soon as one of the males has adhered to this it is at once withdrawn carrying the struggling microgamete in with it. Only the one male obtains admission in the case of the malarial parasites but in the coccidian cyclospora caryolytica, which causes an infective form of enteritis in the mole (talpa), what is called polyspermy occurs.[4] Quite a number of male gametes force an entrance into the macrogamete. Only one of them undergoes the fertilising fusion, whilst the others break down and serve as food for the developing zygote. The presence of superfluous males, however, is apt to disturb the proper relation of male and female pronucleus, and give rise to interesting pathological changes described by Schaudinn. In the tertian parasite only one favoured microgamete gains access, and no sooner has it done so than a coat of mucus is secreted by the female which keeps away the excluded males and is homologous with the cyst wall of the coccidia. The zygote now becomes a motile ookinet, and this becomes an oocyst. Some of the liberated sporozoites, according to Schaudinn, obtain access to the ovary of the gnat and infect the developing ova, so that the young brood next spring harbours the parasite, and the young mosquitoes can confer the disease without having previously sucked blood—a fact of great epidemiological importance if it be confirmed by subsequent observation. Finally, Schaudinn observed the entrance of the sporozoite into his own red corpuscles, thus completing the developmental cycle.

I now come to the last part of my subject—namely, the order of flagellates, to which belong the trypanosomes. Three years ago, in the address already referred to, I gave some account of these parasites in connexion with the diseases of animals known as nagana, due to trypanosoma Brucei, and surra, due to trypanosoma Evansi, and I described the rôle of the tsetse fly as carrier of the former. During the three years that have since elapsed the rôle of these parasites as disease producers amongst the lower animals has been greatly enlarged. Dutton and Todd[5] found a disease of horses in Gambia to be due to trypanosoma dimorphon. Elmassian,[6] followed by Voges and Lignières, has shown that the disease of horses in South America known as mal de caderas is due to another trypanosome (trypanosoma equinum). The sexual malady of stallions and brood-mares known to the French as dourine, or mal de coït, is due to trypanosoma equiperdum, which was first discovered by Rouget in 1896.[7] The so-called galziekte or gall-sickness of bovines in the Transvaal has been shown by Theiler to be caused by a species called after him trypanosoma Theileri.[8] Other forms have been described in the smaller mammals, as well as in birds, reptiles, amphibians, and fishes. But the great access of interest in the study of trypanosomes is due to the fact that they are now known to produce

[3] Loc. cit., Band xx.
[4] Schaudinn, loc. cit., Band xviii.
[5] Thompson Yates Reports, vol. v., 1903.
[6] Conférence faite au Conseil National d'Hygiène le 19 Mai, 1901 (Asuncion, 1901), and Annales de l'Institut Pasteur, 1903, p. 241.
[7] Annales de l'Institut Pasteur, tome x., 1896.
[8] Journal of Comparative Pathology and Therapeutics, vol. xvi., 1903.

disease in the human race. In December, 1901, Dutton[9] was the first to recognise as a trypanosome the vermicule previously seen by Forde in the blood of a European patient in the hospital at Bathurst. He described it accurately and named it trypanosoma Gambiense. In April, 1903, Castellani[10] discovered a trypanosome in the cerebro-spinal fluid of natives of Uganda affected with sleeping sickness and this malady has consequently come to be regarded as one of the manifestations of human trypanosomiasis. David Bruce[11] with his fellow workers, Nabarro and Greig, brought home the propagation of the disease in Gambia to the fly glossina palpalis. Finally, there is the discovery, so far back as 1900, by Leishman and, independently in 1903, by Donovan, in smears of spleen pulp from cases of splenic cachexia in India, of parasites which Rogers[12] has shown to be stages in the development of a trypanosome.

A correct idea of the structure of a trypanosome is essential to an understanding of what follows. Its fish-like body, twice or thrice as long as a red corpuscle, is fringed along one side with the undulating membrane, which is prolonged at one end into the flagellum. In the body is a large nucleus, and towards the posterior end a smaller dot-like mass of chromatin from which originates the margin of the undulating membrane—the edge which is prolonged into the flagellum. The nature and homologies of this smaller mass of nuclear substance have given rise to lively discussion. There seems to be no doubt that it gives origin to, and presides over, the locomotive apparatus—that the edge of the undulating membrane and the flagellum (both of which give the colour reaction of nuclear substance by the Romanowsky method) are part and parcel of this mass, which I shall therefore term the blepharoplast. Trypanosomes bear a close resemblance to the spermatozoa of some animals (bombinator). They multiply mostly by unequal longitudinal division, more rarely by multiple division (rosette formation). The first part to divide is always the blepharoplast. They are agglutinable by foreign or immune serum, as was shown by Laveran and Mesnil. One species at least,[13] that of the rat, has been successfully cultivated on blood agar. Until the researches of Schaudinn trypanosomes were looked upon as independent organisms and were not known to possess any trace of a sexual mode of reproduction.

In the blood of the stone owl (athene noctua) Schaudinn[14] found three distinct protozoal parasites. First there was the proteosoma, the development of which in the mosquito, culex nemorosus, had been so brilliantly discovered by Ross and subsequently studied by Koch. Then there was another plasmodial form of parasite of the red corpuscles, halteridium, previously studied by MacCallum and Koch, and finally there was the so-called leucocytozoön, discovered so far back as 1894 by Danilewsky. The two last-named parasites own culex pipiens as their intermediate host. Previous observers had followed the development of the halteridium (called by Schaudinn trypanosoma noctuæ) as far as it goes on in the hanging-drop of blood. Further they could not pursue it, not knowing the species of mosquito which serves as its intermediate host. Schaudinn finds that as the result of fertilisation an ookinet is formed which moves along like a slug by the aid of its own mucus towards the front of the mosquito's stomach *and there becomes converted into a trypanosome*. The nucleus divides unequally so as to form a hetero-polar spindle. The larger (left) half enters the resting stage, whilst the smaller (right) half, which is now in the ectoplasm at the periphery, again divides, forming another hetero-polar spindle with the long axis parallel with that of the ookinet and the smaller pole forwards. The chromatin of this spindle forms the skeleton of the locomotive apparatus of the future trypanosome, the thickest thread forming the free edge of the membrane, whilst the posterior centrosome becomes the blepharoplast. Thus a trypanosome is formed and of these Schaudinn describes three types: the "indifferent," the "female," and the "male." The ookinet, which is to develop into a "female" trypanosome, has darker protoplasm and a smaller nucleus than the form which he calls "indifferent." It goes through the same nuclear processes, the result being the formation of a larger trypanosome, which is provided with a relatively small flagellum and is therefore less active in its movements. The "female" trypanosome ultimately comes to resemble a mature gregarine and possesses a marked power of resisting external unfavourable influences. If, for instance, the mosquito is starved and then kept on ice all the parasitic forms within it die out save the "female" trypanosomes, which lie buried between the epithelial and elastico-muscular coat of the intestine, last through the winter, and infect the brood of eggs laid next spring. Multiplication of this gregarinoid stage takes place by a process termed by Schaudinn "parthenogenesis" and which he homologises with the re-infection of the warm-blooded host in malaria, the so-called "relapses." The forms which persist in the blood of old-standing cases of malaria are, according to him, old females (macrogametes) [? macrogametocytes]. After a time these "sink" to the level of schizonts; in other words, produce a brood without having been fertilised. This mode of reproduction—the skipping of the sexual generation—appears to me to be homologous with the phenomenon amongst ferns, first described by De Bary under the name of "apogamy." The ookinet which is to form the "male" trypanosomes is distinguished *ab initio* by its small size, large nucleus, and absence of reserve material in its protoplasm. By a process of reduction it gets rid of one-half of its nucleus—the half which is preserved in the female—and the remainder splits up so as to form eight minute trypanosomes. These Schaudinn regards as microgametes which, however, are unable to perform their physiological function of fertilisation. This act is only performed at one period of the life-history of the parasite viz., within a few minutes of its arrival within the stomach of the mosquito.

The intestinal canal of the mosquito thus becomes inundated with "trypanosomes" of all three kinds. Sometimes they are produced in such swarms that their resting stages occupy all the epithelium and the mosquito dies from the disease. Ordinarily the insect feeds three times and it is during these three periods of digestion that the parasites make their way down the bowel, through the wall of the colon, and so into the blood stream, whereby some get carried to the ovaries, where they infect the young brood; most, however, are carried to the front of the body cavity, into the head, where they accumulate round the pharynx and ultimately rupture into it and so obtain access to the lumen of the proboscis. The mechanism of transference to the warm-blooded host is extremely interesting and as the parasites of human malaria may possibly be transferred in the same way it seems worth while to mention the details. Culex pipiens possesses œsophageal diverticula which become distended with gas and may be termed "gas bags." The gas is carbon dioxide, which is evolved by a sort of yeast-like fungus always present in the insect's stomach from traces of glucose present in blood, or—much more abundantly—from glucose present in the plant juices which the insect occasionally sucks. At the commencement of the act of suction, when the insect has its proboscis buried in the skin of its victim, its body undergoes one or more violent contractions which eject the contents of its fore-gut and "gas bags" into the skin. These contents comprise gas, saliva, and whatever particulate matter is present—viz., yeast cells and sporozoites. Schaudinn looks upon this contraction as a sort of dyspnœal effort due to the entrance into its tracheæ of the CO_2-laden air which bathes the skin. He succeeded in producing the contraction artificially by placing an infected culex on a cupped slide, with its proboscis in a drop of glycerine under a cover-glass, and its body projecting over the hollow. In this he evolved some CO_2 from a fragment of chalk and a droplet of acid, and he observed that the gnat's body underwent a violent contraction, which had the effect of expelling into the glycerine its contained gas, yeast cells, and sporozoites. Viewed teleologically, the effect of the injected CO_2 would be to paralyse the thrombocytes and in other ways to delay the coagulation of the blood. The hyperæmia and pain caused by the bite he considers to be due to the enzyme of the yeast cells. He dissected out the "gas bags" and pushed them into a fine puncture in his

[9] Journal of Tropical Medicine, December, 1902, and Thompson Yates Reports, vol. iv., 1902, part 3.

[10] Letter dated Uganda, April 5th, 1903, and addressed to the Royal Society; THE LANCET, June 20th, 1903, p. 1735.

[11] Reports published by the Royal Society in 1903; Brit. Med. Jour., Nov. 21st, 1903.

[12] THE LANCET, July 23rd, 1904, p. 215; see also Jan. 7th, 1905, p. 16; and Marchand and Ledingham: Zeitschrift für Hygiene und Infektions krankheiten, Band 47, p. 1.

[13] Since writing this I have learnt that the nagana trypanosome and several species from birds have been cultivated by Novy and MacNeal. (Novy and MacNeal: Journal of Infectious Diseases, January, 1904, and January, 1905; Abstract in American Medicine, Nov. 26th, 1904.)

[14] Generations- und Wirthswechsel bei Trypanosoma und Spirochæte, Arbeiten aus dem Kaiserlichen Gesundheitsamte, Band xx., 1903.

own skin, with the result that the typical swelling, redness, and itching came on at once. The salivary glands he found quite inoperative. The effect of the "gas bags" appears to depend on the quantity of yeast cells contained in them, for it was much more marked when the yeast had been allowed to proliferate actively as the result of feeding the gnat on plant juice. The fungus is not a true yeast, but a yeast-like stage in the life-history of one of the entomophthoreæ, fungi with which we are all acquainted in the shape of the well-known empusa muscæ, which kills flies in the fall of the year and causes their bodies to adhere to the window pane surrounded by a white cloud of ejected conidia.

Let us now follow the trypanosomes into the blood of the owl, whither they are carried by the bite of the culex. Such "males" as are conveyed in the fully differentiated state die off. The mature "females" are usually too large to pass the gnat's proboscis. It is the "indifferent" forms and young "females" that thrive in their new surroundings. Adhering by their flagellum to the red corpuscles they bore their way in, withdraw their flagellum, and grow larger in the plasmodial form described by MacCallum, Koch, and other observers. They do *not* proceed to form asexual rosettes (schizonts)—a fact expressly drawn attention to by Koch who could not find in the blood of his artificially infected sparrows and pigeons any trace of this form of multiplication so abundantly met with in human malaria. The intracorpuscular parasites leave their host cells only during the night and in the deepest recesses of the circulation—the spleen and bone marrow. There they swim about for a while as free trypanosomes of all three varieties above described. During the day they mostly go back to the corpuscles. Thus, they change about at intervals for six days, by the end of which time they have attained their full size. Finally emerging, the full-grown parasite now multiplies by repeated acts of longitudinal fission till the products have attained their minimal size. The excessively minute flagellates so formed penetrate into fresh red corpuscles till the blood becomes fairly inundated. Then they die down and only a small number of "indifferent" forms survive, which become gradually evolved into macro- and micro-gametocytes and can only complete their evolution in the body of the gnat.

I have dwelt thus at length upon the history of this parasite on account of the light it throws upon the nature of the Leishman-Donovan body. These parasitic bodies are contained in large endothelial cells of the spleen and marrow; so, for a time, are the halteridium parasites. The Leishman-Donovan bodies possess two nuclei—a large oval and a small rod-shaped one; so do the involuted intracorpuscular trypanosomes of halteridium. Finally, we have the brilliant discovery by Rogers that blood containing Leishman-Donovan bodies gives rise to trypanosomes. The details given by Rogers tend to support the supposition that the life-history of the parasite of human cachexial fever runs on the same lines as that of owl malaria. For example, "the splitting up of the parasite into two, the separation usually beginning at one end," suggests the longitudinal division of the trypanosomes; and "the presence of smaller pear-shaped flagellated bodies like those described by Plimmer in tsetse fly disease," which are evidently involution, or immature forms, also described by Laveran and Mesnil in their recently published text-book,[15] under the name of *mises en boule*. Finally, there is the fact that the trypanosomes were only developed in Captain Rogers's cultures at a low temperature (22°), which would point to their being naturally produced outside the warm-blooded host, in a blood-sucking invertebrate, such as a bug or a mosquito. There can be little doubt that the original opinion of Major Leishman with regard to these bodies is correct and that kala-azar and cachexial fever will prove to be a form of human trypanosomiasis. The same opinion doubtless holds good of the bodies found in the granulation tissue of Delhi boil and tropical ulcer.

Remarkable as is the connexion so established between the malarial parasite and the trypanosome, it is, at any rate, a connexion between one protozoön and another. But the developmental cycle which I am now about to recount will, if established by further investigation, effect a still more surprising connexion—viz., between a malarial parasite and an organism hitherto looked upon as a bacterium, spirochæte. The malarial parasite in question was discovered so far back as 1891 by Danilewsky of Charkow[16] in the blood of athene noctua and called by him the leucocytozoön, from its dwelling in the white corpuscles. Both its warm-blooded and cold-blooded hosts (culex pipiens), as well as its general aspect, are identical with those of halteridium. In the mosquito's stomach its stationary macrogametes are fertilised by the motile microgametes. An ookinet is thus formed which becomes spirally coiled, the coils afterwards coalescing. This process is remarkably like what occurs in the development of the sexual fructification of the cleistocarpous ascomycetes, such as eurotium. The original nucleus divides into a vast number, each of which presides over a territory of protoplasm which gradually becomes differentiated into a trypanosome-like body, with blepharoplast, undulating membrane, and flagellum. Of these, as in halteridium, there are three sorts—"indifferent," "female," and "male"—all very minute. As the result of repeated division the individuals may become so small as to become not only incapable of measurement but of being perceived individually even with the highest powers. It is only when agglutinated in rosette form that they can be well seen and Schaudinn has no doubt that they would constitute a *filtrable* virus; that is, one capable of passing the pores of a porcelain filter and therefore in the same category as those of pleuro-pneumonia, foot-and-mouth disease, and perhaps of small-pox. These minute trypanosomes increase greatly in length and become spirally twisted round their long axis so as to constitute what have hitherto been termed spirochætes. Now the leading pathogenic spirochæte hitherto known is S. Obermeieri, the cause of relapsing fever. It has been observed to move equally well in either direction, "forwards" or "backwards." But trypanosomes always move flagellum first, and this would seem to be a serious difference between them and spirochæte. Schaudinn states, however, that these long, thin trypanosomes divide longitudinally and that the two new individuals *remain coherent by their non-flagellated ends*, and can accordingly move in *either* direction. They continue to cohere until each individual has again divided in the same way. These spirochæte-trypanosomes agree with the trypanosomes of the mammalia and differ from those of birds (halteridia) in becoming agglutinated by their *non-flagellated* ends. It is at the end of the first digestive period of the mosquito that these spirochæte-like trypanosomes are developed from the ookinet, inundate the body cavity and infect the ova. On reintroduction, natural or experimental, into the owl, they begin by multiplying enormously in the spirochæte form before proceeding to the formation of sexual individuals. To me it seems surprising that neither Danilewsky nor the other workers who observed the intra-corpuscular stage of this parasite should have seen the spirochæte. The cell preferred by this parasite is not the mature red corpuscle, nor yet the mature leucocyte, but the hæmoglobin-free precursor of the former—the erythroblast. This accounts for its presence mainly in the spleen and marrow (cf. the behaviour of the Leishman-Donovan body). In human relapsing fever Metchnikoff observed that when the spirochæte disappears from the blood at the crisis it accumulates in the spleen. The parasites undergo successive stages of intra- and extra-corpuscular existence in the blood of the owl and on removal from it by culex pipiens at once proceed to the formation of large rounded macrogametes with dense protoplasm and small active microgametes which look like a minute trypanosome or a spirochæte. Fertilisation gives rise to the ookinet from which we started. Should this developmental cycle be confirmed by other observers then it follows that trypanosoma and spirochæte are really only different names for the same thing. This would account for the non-cultivability of the spirochæte on ordinary substrata and the persistence of the parasite in the spleen after its disappearance from the general circulation. It would also appear probable that its propagation would be effected by some blood-sucking parasite as has actually been found to be the case with the "spirillosis of fowls," recently described by Marchoux and Salimbeni,[17] who found that spirilla were conveyed by the bird tick, argas miniatus. I am not aware that the intermediate host of the spirillosis of ducks described by Sakharoff, or of that of oxen quite recently described by Laveran,[18] has been ascertained. In the case of human

[15] Trypanosomiases, Paris, Masson, 1904.

[16] Abstr. in Centralblatt f. Bakteriologie, Band ix., 1891, p. 120.

[17] Annales de l'Institut Pasteur, 1903.

[18] Comptes Rendus de la Société de Biologie, April 29th, 1903, No. 10.

relapsing fever it seems most probable that bed-bugs carry the infection. Karlinski [19] found abundant spirilla in the bugs captured in Bosnian houses where the inmates suffered from the fever, whilst he could find none in bugs obtained from houses where there was no fever. He found that the spirilla persisted for 20 days in the bugs. The human "tick" fever in the Congo has recently been found by Dutton and Todd to be caused by spirilla which are conveyed by the tick ornithodorus.

This paper, already far too long, would be swollen to inordinate dimensions were I to attempt to refer in detail to the piroplasma parasites. I am, however, absolved from the task by the fact that this society has already been this season the recipient of a very admirable communication from Professor G. H. F. Nuttall, F.R.S., on the subject of Ticks and Tick-transmitted Diseases, which practically covers the ground. I will merely mention that Kossel and Weber [20] of the German Imperial Health Office have found trypanosome-like stages in the blood of cows affected with hæmoglobinuric fever and also in the intestines of ticks that had sucked the blood of such cows. Furthermore, Theiler, and quite recently Bowhill, [21] have found both trypanosome and spirochæte forms in the blood of oxen and dogs affected with piroplasmosis. Judging by analogy it seems not improbable that the hitherto unseen parasite of yellow fever may prove to be a spirochæte too small to be seen with the highest powers of the microscope.

Dublin.

THE TREATMENT OF PLEURITIC EFFUSION BY PARACENTESIS AND INCISION IN SEROUS EFFUSION, EMPYEMA, AND PYOPNEUMOTHORAX.[1]

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THE invitation to read a paper before this time-honoured society was a compliment which I greatly appreciated but it brought with it the difficulty of deciding upon a subject which should be of sufficient general interest and at the same time one upon which I could say anything worthy your attention. My difficulties were, however, solved by the choice being made for me and I was told that the treatment of pleuritic effusion would be acceptable. This selection certainly commended itself to me as dealing with a common affection of which we all should have experience and probably views of our own, while it was at the same time a subject which had always been of special interest to me and upon which I might speak freely. The general treatment of pleuritic effusion would lead me into fields too wide to cover within the time and I shall restrict myself to the treatment of serous effusion, empyema, and pneumothorax by paracentesis and incision.

I.—SEROUS EFFUSION.

I do not propose to enter upon the question of diagnosis. In most cases this is easy and where difficulty arises the needle will settle it. If the needle be clean and ordinary care is exercised the exploration is simple and safe. Serous fluids do not change their character except as the result of fresh infection with some pyogenic organism. If a serous effusion become purulent after the passage of a needle the presumption is that the operation was not aseptic. It is most important, therefore, even for such a small operation as an exploratory puncture, that the strictest antiseptic precautions should be taken—the side washed, scrubbed, and most scrupulously cleansed, as well as the needle sterilised. With these precautions the needle may be passed as many times as necessary with impunity. I have tapped a case 36 times and left the fluid at the last tapping as clear and uninfected as at the first. Dieulafoy taught this long before the advent of antiseptic surgery, though his teaching was not generally accepted.

To understand the principles of treatment of pleuritic effusion it is essential to have correct views of the way in which the fluid is got rid of from the pleura when it is left alone and disappears spontaneously. It is often said to be absorbed, yet the part which absorption plays in the removal of the fluid is very small. The pleura is a lymph sac connected through the stomata or small pores with the lymphatics of the lungs on one side and of the thoracic walls on the other. The lymph trunks on both sides have valves directed away from the pleura. Such an arrangement of valves indicates a circulation and there is such a circulation of lymph in health through the pleural sac, lymph passing into the sac from the blood-vessels and being removed by the lymphatics, and these processes are so adjusted that no fluid accumulates in the pleural sac. The sac is accordingly often described as dry but it is not dry; it always contains a little fluid though not more than enough to keep the surface moist, for it is removed as fast as it enters.

This action may be called the "lymphatic pump." The movements of respiration work the pump. Inspiration sucks lymph in; expiration, by the help of the valves, drives it out; the direction of the lymphatic circulation being in the lungs from the pleura to the root of the lung and in the thoracic walls from the pleura to the adjacent lymphatic glands. Fluid might therefore accumulate in the pleura in two ways. On the one hand, more fluid might enter than could be removed (this is what probably occurs in hydrops pleuræ or dropsy); on the other hand, owing to some interference with the pump mechanism, less might be removed than is necessary. In inflammation of the pleura both causes are in action, the inflammation causing increased exudation, while the inflammatory swelling and fibrinous exudation choke the stomata, so that the fluid exuded cannot enter the lymphatics easily and be pumped away. When the effusion has reached a considerable size the direct pressure exercised by the fluid upon the stomata and superficial lymphatics creates a further obstruction. Lastly, a large effusion makes difficulties for itself by greatly reducing or abolishing the respiratory movements—that is to say, the force by which the lymphatic pump is worked. As the effusion grows in size the respiratory movements on the affected side become less and less and ultimately cease, so that the pump stops working. When this point has been reached, even if the effusion increase no more, what is already in the pleura cannot be removed, for the pump does not work. Absorption might still act but the small part which it plays is now obvious. The removal of some fluid now will start the pump again. Thus we have an explanation of what is otherwise not easy to understand—viz., the removal of only a few ounces of a large effusion being followed by the gradual disappearance of the rest. This fact is not to be used as an argument for the deliberate removal on tapping of only a portion of the effusion. On the contrary, the pump should be given every chance to work and all the fluid should be removed which can be conveniently obtained. This much of theory is necessary because treatment to be rational must be based upon correct views of the physiological and pathological conditions which it has to deal with.

Into the question of the general treatment of pleurisy and pleuritic effusion other than by tapping I do not propose to enter save to refer in passing to a once popular line of treatment—the so-called derivative method. It is based upon the incorrect assumption that effusion is removed by absorption by the blood-vessels and that if the discharge of fluid be promoted from some other part of the body—e.g., the skin, the bowels, or the kidney—the blood thus impoverished will find a source of fluid from which to replenish itself ready to hand in the effusion and thus the effusion will be "absorbed." The derivative treatment has been tried and found wanting, and no wonder, as it is based upon incorrect theory.

I now turn to the question of paracentesis. *The indications for paracentesis* are given by the size of the effusion, by its duration, and especially by the occurrence of dyspnœa. I have already shown how a large effusion is its own obstacle to removal. It therefore follows that where the pleura is full of fluid and the respiratory movements are completely abolished the sooner paracentesis is performed the better. Even a small effusion is better tapped if it has existed some time and shows no sign of disappearance. Yet it is not always easy to be sure that it is stationary, for there may be sufficient thickening of the parietal pleura to give dulness

[19] Centralblatt für Bakteriologie, 1901, Orig., p. 569.
[20] Arbeiten aus dem Kaiserlichen Gesundheitsamte, Band xx., 1903, p. 438.
[21] Journal of Hygiene, 1905, No. 1.
[1] A paper read before the Medical Society of Plymouth on Feb. 18th.

on percussion though the lung may have so far expanded and the fluid disappeared that surprisingly little fluid, if any, is obtained on paracentesis. In such cases the respiratory murmur and vocal resonance are better guides to the intrathoracic condition than percussion.

Early tapping—i.e., tapping in the first few days of an effusion—has been advocated chiefly for two theoretical reasons: (1) that early tapping shortens the duration of the attack, and (2) that if the lung be left long compressed by fluid it will become bound down by adhesions and thus prevented from re-expanding. Neither of these reasons is strictly accurate. The duration of the pleurisy is not shortened by tapping. The inflammation continues its course completely unaffected by paracentesis. It is not with serous effusion as it is with an empyema, where the removal of the pus is followed by the fall of the temperature. On the contrary, the temperature remains as high as before and continues raised until the inflammation comes to a standstill irrespective of whether paracentesis be performed or not. Again, though the lung may, if long compressed, be bound down by adhesions, still it may be compressed by fluid for weeks or months and yet remain perfectly free and expand readily when the fluid is removed. I have seen this occur in two cases in which the side had been full of fluid for 18 months before paracentesis was performed.

The occurrence of *dyspnœa* presents some points of special interest. Of course, as the effusion increases the respiratory capacity of the lungs is diminished and there must therefore always be some shortness of breath, but, other things being equal, the amount of dyspnœa varies with the rate of effusion—i.e., with the rapidity with which the fluid has accumulated; thus it may be trifling with a very large effusion if the fluid has accumulated slowly and severe with a much smaller effusion if it has formed rapidly. The respiration can adapt itself to the altered conditions if time be given, but if not it becomes embarrassed and dyspnœa results. But dyspnœa may arise and rapidly become urgent with effusion in a way which requires a different explanation and has a much more serious significance. A patient may have the side full of fluid and the organs greatly displaced, so that the total respiratory capacity is reduced to one-third or one-quarter of what it would normally be and yet for days or weeks no particular dyspnœa be present. All at once, without any warning, dyspnœa arises and rapidly becomes urgent, so that if relief be not quickly given the patient will die from suffocation. This is due to what is called "congestion" of the opposite lung. But that lung has been pathologically in a condition of congestion throughout, inasmuch as it has had to do the work of the two and consequently to deal with double the normal quantity of blood. It has been able for a time to meet these demands made upon it successfully and has given no clinical signs of congestion. All at once those signs appear—viz., wheezing and crepitation and the expectoration of fluid which may be blood-stained. The extravasation of fluid into the tubes upon which these signs depend is not due to bronchitis, for it is not an inflammatory exudation. It is the result of functional breakdown or incompetence in which probably both the heart and the lungs take their share. The signs of congestion arising in the one lung when the other is out of gear are of very grave significance. In the case of effusion they give the indication for immediate paracentesis but where they depend upon a condition to which no relief can be given, as in pneumonia, they are of the gravest omen and signify a fatal termination.

I saw an instance recently in a young lad who had effusion following pneumonia. He was breathing 70 in the minute and was bathed in a cold clammy sweat; the rattling and wheezing in the other lung were extreme. The lad was conscious but was suffering horrible distress and begged piteously for relief. So ill was he that I did not venture to examine the chest much; indeed, I dreaded lest the mere prick of the needle should prove fatal. The removal of two pints of fluid gave immediate relief and snatched him out of the jaws of death. He is living still and I hope that he will get well. I thought the case absolutely desperate at the time of operation but one learns never to despair.

Indications against paracentesis there are none. The temperature is entirely unaffected by tapping for good or ill. The risk of the conversion of the effusion from serum to pus is, with proper precautions, *nil*. Lastly, the statement still often made that the compression of a tuberculous lung by fluid is so far of advantage that it checks the further development of tubercle in it is at the most only partly true and if used as an argument for leaving the fluid unrelieved longer than it would otherwise have been is mischievous.[2]

The best method of tapping a serous effusion is what is called *syphonage*. The apparatus consists of an ordinary trocar and cannula connected with an indiarubber tube reaching to the floor. The mouth of the tube should be placed in a vessel, say a tumbler, filled with boiled—i.e., sterilised—water so as to avoid the chance of any air being sucked into the chest during the operation. As soon as the needle has been introduced into the side and the trocar withdrawn the fluid flows into the tube and fills it, thus forming a syphon by which the effusion is drawn off under a constant negative pressure of from 18 to 24 inches of water—that is to say, of the height of a column of water reaching from the seat of the puncture to the vessel on the floor. This pressure is sufficient to empty the side or at any rate to remove all that can safely be taken away. What will not flow away at that pressure had better be left. If tapping be performed in this way and the fluid removed slowly under a steady, constant pressure the lung expands gradually as the fluid flows away.

The change in the lung from the conditions of long-standing collapse to one of distension and renewed activity is attended with considerable respiratory and circulatory embarrassment which may even lead to symptoms sufficient to compel the operation to be suspended. These symptoms are pain, cough, shortness of breath, faintness, and general discomfort. The *pain* is usually referred to the sternum or upper part of the affected side and is probably due to the stretching of adhesions there. If the flow be stopped for a few minutes the pain may pass off and some more fluid may be then removed without recurrence. Usually the pain returns and continues to increase, so that the operation has to be terminated. The *cough* may be due to irritation of the surface of the expanding lung by the cannula and then can be obviated by withdrawal of the cannula or the alteration of its direction in the pleura. Cough may, however, be connected with the expansion of the lung and the alteration of the circulation in it or to the presence of some secretion in the larger tubes which accumulated there while the lung was compressed. In these circumstances it may be very severe and paroxysmal so that it becomes impossible to proceed with the operation. The *shortness of breath* is for the most part subjective and if the flow be stopped for a time it passes off and does not return. At other times, though there is no cough, pain, or any special dyspnœa, the patient suffers much *general distress* and becomes anxious and uneasy or even pale and faint. These symptoms are, I think, generally of cardiac origin and depend upon the altered condition of the circulation as the lung re-expands. At any rate, the distress may be sufficient to make it clear that the operation cannot be continued with safety. Usually as the lung re-expands the air enters freely and the respiratory murmur is fairly normal but sometimes towards the end of the operation wheezing sounds and crepitation develop, indicating the exudation of fluid into the air tubes. A considerable quantity may then be expectorated which may be streaked or stained with blood. In its most extreme form the conditions of serous or albuminous expectoration develops, a very rare and remarkable condition which, though alarming, is seldom fatal.

All these symptoms, though they may occur when paracentesis is performed by the syphon, are much more likely to arise when the fluid is removed more rapidly and under much greater negative pressure by the aspirator. For this reason the aspirator should not be employed—it is not necessary and is, moreover, attended with risk. To use the aspirator with the object of sucking the lung out and making it expand is a dangerous proceeding, for it may cause the lung to rupture and produce pneumothorax or, by the infection of the serous fluid, possibly pyopneumothorax, that is to say, pneumothorax in its most unfavourable form. This risk is no imaginary one. I have seen the lung ruptured on many occasions and knowing what a strain must be put upon the lung I tremble when I see the aspirator used fully exhausted so that the fluid rushes out from the pleura when the tap is turned in a violent jet. Of course, if the lung were perfectly free and could expand uniformly no harm might ensue, but it is impossible to tell that there are not adhesions which will check the expansion of some part of the lung and expose it to

[2] Further details on these points will be found in my book on "Diseases of the Organs of Respiration," vol. ii., p. 670, &c.

a strain which it cannot stand. The great difference of pressure produced by the aspirator is shown by the frothing which takes place in the aspirator bottle, the gases contained in the serum being liberated and filling the bottle with bubbles. To use the aspirator in this way is like cracking a nut with a sledge-hammer. It is attended with great risk and no advantage. If the aspirator be employed at all it should be kept exhausted only sufficiently to make the fluid flow and even then it should have a manometer attached to indicate the actual pressure which is being employed. The aspirator is, however, quite unnecessary and is better never used for the paracentesis of serous effusion. Syphonage will remove all the fluid that need be removed and is quite safe.

A general *anæsthetic* is quite unnecessary and, indeed, undesirable, as it masks the symptoms which show that the operation has gone far enough. The trifling pain of the skin puncture can be obviated by applying to the part for an hour or two previously a pad of lint well soaked in a 4 per cent. solution of cocaine.

Paracentesis may be repeated as often as the fluid reaccumulates but when frequent paracentesis fails to cure the question of further radical measures may arise.

Free incision of the side deliberately performed for a refractory serous effusion is rarely required. Some few years ago I treated a case in this way in which paracentesis had been performed more than 30 times. The patient being highly tuberculous was not a favourable case for such an operation but she made a complete recovery in time. It is now many years ago but the chest has been perfectly well ever since and it is difficult to detect, except by the scar, on which side the operation was performed. A second case of the kind I had under my care a year or two later.

The objection to this method of treatment is, of course, that it necessarily leads to empyema but, as the cases show, this is easier to cure than the recurrent serous effusion. The operation should not be performed unless the lung be free from adhesion and able to expand freely and every care must be taken to make sure of this. Otherwise a cavity is left in the pleura which it will be difficult to close and the patient might have been better off with that space full of fluid than open to the air and discharging pus. Still, the cases which I have recorded show that in appropriate cases this is a method of treatment that is justified by success. To recommend free incision as a routine method of treatment of serous effusion into the pleura within a few days of its development is as rational as it would be to lay the knee-joint open for a recent simple synovitis. Yet this so-called radical treatment has been advocated. I consider it unjustifiable.

II.—PURULENT EFFUSION: EMPYEMA.

When pus is pent up in the body the sooner it is let out the better; accordingly the treatment of empyema is by free incision and rightly. Still, it is interesting to be reminded that in the days when the operation for empyema was not so simple and successful as it is now many cases were cured by paracentesis. The knowledge of this fact may be useful even now, for it sometimes happens that a case of empyema comes under observation in such a condition that immediate operation seems risky and then paracentesis will give relief and gain time till the patient is in a better state to stand the incision. I can recall many cases both in adults and children in which one paracentesis or more resulted in complete cure and in some it would be impossible now to tell which has been the affected side. Of course, if paracentesis be performed for empyema the aspirator must be employed, as considerable suction may be necessary to get pus to flow, but more suction than is absolutely required should never be used, for with every increase of pressure the risk of rupturing the lung increases, especially as in such cases the empyema may be already trying to break through the lung and there will therefore be weak spots in it.

When incision is to be made, the rule which Trousseau laid down should never be departed from—that at the time of operation a needle should be passed first and when the pus has been found used as a director to lead the knife into the cavity. It is impossible to be sure beforehand that an empyema is a simple one; often those which from the physical signs seem simple prove to be difficult, so that the pus is not easy to find. If the pus cannot be found with the needle it will not be found with the knife. Therefore to pass a needle first should be the invariable rule. I have seen failure to find pus with a needle prevent an operation which in the end proved to be unnecessary, as the diagnosis was wrong, and I have many times found pus with a needle so deeply seated that no one would have ventured to explore so far with a knife unless the needle had been there to guide it.

The seat of incision.—Of course, the incision must be made wherever the pus is, but in a case where the choice is open the best place to select is just in front of the post-axillary border and on the transverse level of the nipple. It need not be farther down, because directly the pleura is evacuated the diaphragm rises and soon reaches that level. It need not be farther back, because the patient will not lie upon the tube and with the incision in this place he can lie comfortably on the back. If the incision be farther back the patient will turn over on to the opposite side and the drainage will be no better than with the incision in the place I recommend.

Resection of rib should not be performed as a matter of routine. Its object is to provide free drainage. If drainage can be obtained without, resection is not necessary and an unnecessary operation should never be performed. There is no reason why the hole should be round. Drainage will be just as good if the hole be oval and two small drainage tubes placed side by side between the ribs are quite as efficacious as one large tube which necessitates resection. At the time of operation the pus often contains curdy flakes which are difficult to remove, but these curdy flakes are the consequence of the pus having been in the pleura for some time and they do not form again after the side has been opened. However, they can all be got rid of at the time of operation by separating the ribs with the finger and washing the side freely out. Of course, if resection is necessary it must be done, but it is often unnecessary and should not therefore be considered a routine part of the procedure.

Washing out.—I cannot discover whence the tradition comes that washing out the pleura is a dangerous proceeding. There is no risk in it whatever. I have washed the pleura out many hundred times and I have never seen a patient become even faint in the process. On the contrary, I should lay down the rule that the pleural cavity ought to be washed out thoroughly wherever the pus is curdy, flaky, or offensive, or contains blood clot, for by this means recovery is greatly accelerated.

The mode of cure of an empyema cavity is by expansion of the lung and falling in of the side. By these means after incision, in a case that has not been neglected or allowed to remain long unrelieved, the cavity may be almost completely obliterated in the course of a few days and nothing be left but the track in which the tube lies. There should be no hurry to remove the drainage-tube. Safety should not be sacrificed to the desire for brilliancy. The track of the tube should close up from the bottom. In a simple case the tube may be shortened rapidly and soon can be put in no more. But it may happen that if the tube be removed too soon the external opening quickly closes, then pus accumulates behind and either makes its way out through the old incision or this has to be opened with the knife again and a tube re-inserted. I have seen the desire to whip the tube out too soon result in three or four operations on the same patient for the purpose of putting it back again. Not infrequently if a refractory track be examined with a probe it is found to extend back to a pouch somewhere behind, where a broken-down gland or some other lesion existed and which presumably caused the original empyema. As a rule, it may be held that if the tube is not out in three weeks or so it will be necessary to retain it for a long time, possibly months. I have seen a case in which a small tube had to be worn for three years but in the end recovery was complete.

The management of the case after incision requires more consideration than is often given it. Even after free resection and the insertion of a large drainage-tube drainage may not be free. Indeed, the tube may itself prevent drainage and sometimes lies actually across the exit from the cavity and closes it. By the careful use of a probe it is easy to ascertain exactly what the condition of things is and how to deal with it. Whether I have been myself responsible for performing the original operation or not I make it a rule to examine the cavity with the probe every few days, and I may say in passing that the after-treatment of an empyema is better left to the physician than to the surgeon.

Estländer's operation is very fatal and when successful is followed by fearful deformity. Now that empyema is recognised earlier and is better treated the cases in which it might be even thought of will be few and far between.

Excisions of small portions of three or four ribs, modified Estländer as that has been called, is not an Estländer at all. It is generally of little use. The remarkable cases recently published by Mr. C. A. Ballance show what can be done by a skilful surgeon, but the results are quite exceptional and neither the cases nor the results are likely to recur.

III.—PNEUMOTHORAX.

In pneumothorax tapping may be indicated at two different periods: (1) immediately after its occurrence and (2) later when effusion has formed. Immediately after its occurrence tapping may be required to give exit to the air and to relieve the dyspnœa which has been produced by the rapid collapse of the lung and the consequent embarrassment of the respiration and circulation. For this purpose the apparatus used for syphonage is sufficient and an aspirator is absolutely unnecessary. If paracentesis repeated several times fails to give relief and urgent symptoms continually recur free incision of the side may be performed. Various forms of valved tubes have been advocated but they almost always lead to incision, so I prefer incision at once as safer and more satisfactory. When effusion has formed, whether of serum or pus, the treatment should be on general lines.

In hydropneumothorax air is readily absorbed but the fluid is under less favourable conditions for removal than when no air is present. Sometimes the air is absorbed and fluid only is left which is removed gradually in the ordinary way, though it may have to be assisted by paracentesis. When air and fluid are present together care must be taken in tapping so that the mouth of the cannula is below the level of the fluid, otherwise the air only and not the fluid will be removed. In such cases the opening from the lung is nearly always sealed and with the syphon there is little risk of opening it afresh but, of course, the aspirator would be extremely dangerous. The prognosis of hydropneumothorax is by no means bad and would be better if paracentesis was performed earlier than it usually is.

Pyopneumothorax is the most serious form but even this may be successfully treated on general principles. It is not the presence of air with the effusion that makes the difference but that both alike are in most cases the result of tuberculous disease of the lung, from which the patients die though they may get well of the pneumothorax.

Tuberculous disease of the lung used to be regarded as conclusive against free incision of the pleura in any circumstances. That is not the view held now in regard to empyema nor should it be either in respect of pyopneumothorax as cases which I have recorded show. Therefore I do not hesitate to lay down the rule that pyopneumothorax should in all cases be treated like empyema—i.e., the side should be laid freely open and drained so soon as the presence of pus has been established. If that be done the results for pyopneumothorax will not be worse than for tuberculous empyema and will certainly be better than leaving the case alone and doing nothing.

The treatment of pleuritic effusion is a subject by no means exhausted, yet, rapid as our progress in recent years has been, our knowledge of the physics of the pleura and the lungs, upon which rational treatment must be based, is very far from complete. If incidentally I have suggested problems which still await solution, or have shown that even in so ordinary a subject there is still much work to be done, the labour of preparing this paper will be amply repaid.

Wimpole-street, W.

A CASE OF INTRAPELVIC EXTRAVASATION OF URINE.

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THE more common form of extravasation of urine is well known. From blows or kicks on the perineum, falls astride, or rupture of the urethra behind a narrow stricture the urine escapes into the perineal space in front of the triangular ligament and burrowing backwards as far as the transversus perinæi muscle it there finds a barrier formed by the junction of Colles's fascia with the base of the triangular ligament which changes its course and directs it forward and upward. This fascia is attached to the ascending rami of the ischium and the os pubis, rises convexly like a tent, covering the structures filling the perineum, and anteriorly turns outward to join Scarpa's fascia in the groin, thus preventing the constantly increasing flow of extravasated urine from making its way from the perineal space into the thigh and directs it first forward, after filling the anterior half of the perineum, into the scrotum and the penis and then upward into the connective tissue of the anterior abdominal wall, and laterally above Poupart's ligament towards the loins. In most traumatic ruptures the tear is near the junction of the bulbous and membranous portions of the urethra just in front of the triangular ligament, for in several cases in which there has been a large wound in the perineum it has been possible, by passing the finger into the wound and guiding it along the anterior aspect of the triangular ligament, to place the tip on the torn end of the urethra, as it lies in the opening in the ligament and thus to introduce an instrument into the bladder just as one passes a female catheter by touch alone. In other cases the wound is in the membranous portion only, where it lies between the anterior and posterior layers of the triangular ligament. When the urethra is ruptured in this situation, in addition to the urethral tear the anterior layer of the ligament is also lacerated, for the course taken by the extravasated urine is the same as when the rupture is in front of the ligament at the bulbo-membranous junction.

These are the two commonest forms of ruptured perineal urethra and it is seldom that one comes across any other and in both the urine takes a forward course, running superficially the whole way. Should the urethra, however, be torn further back a very different path is pursued by the escaping urine. Such an accident occurred in the case of a young sportsman who was thrown from his horse when hunting on Jan. 12th, 1904. The accident seems to have been undoubtedly a severe one. A gate had been opened for the horses to pass through but as the rider was approaching it swang to and he was obliged to negotiate it at a short distance and at an inadequate pace. The consequence was that the horse did not rise sufficiently to clear the gate and catching its fore-legs on the top bar turned a somersault and came down on its back with great force with the rider underneath. The latter probably came in contact in the sitting posture and the horse following drove the pelvis into the hard chalky ground. Some stone or hard piece of raised soil must have come into violent collison with the perineum and driven it forcibly upwards.

The patient was carried home, a distance of four miles, and Mr. F. Calvert was summoned at 4.30 P.M. the same day. Mr. Calvert found on his arrival that the patient had passed urine half an hour before the accident and that he was complaining of much pain in the back and in the left side of the pelvis and groin. There were no great degree of shock and no symptoms at that time of internal injury. A somewhat restless night followed and on the next morning a catheter was passed as far as possible and a small quantity of blood and urine was drawn off. In the afternoon, accompanied by Dr. J. P. Park of Beverley, Mr. Calvert again visited the patient and again introduced a catheter into the urethra, drawing this time only a little blood. The patient said that he had previously passed water freely while in a bath. From what I saw afterwards I do not think that any urine at all was passed on this occasion but that he simply urinated into the torn structures. At 9 P.M. the same evening I saw the case in consultation with Mr. Calvert and Dr. Park. At the examination no swelling was found in the perineum or the scrotum and neither sign nor symptom of extravasation in the usual situation. Above the pubes, however, there was a large central globular tumour, dull on percussion and extending three parts of the way up to the umbilicus. It was tender to the touch and pressure on it caused an immediate desire to micturate. The lump was tense and semi-fluctuating and I had little doubt that it was a distended bladder, but all attempt to get an instrument into the bladder proved futile, for on reaching the deep urethra the tip always deviated to the right and there it entered a space where it had considerable liberty of movement on rotation but with the finger in the rectum it could be at once felt that it had never reached the bladder.

The patient was therefore without further delay placed on the table, anæsthetised, and the pubes was shaved and cleansed. On making an incision in the middle line above the symphysis a stream of dark blood and urine poured into the incision and over the abdominal wall. The stream was of

about the size and curve of that which flows from a healthy adult urethra. At first the source was supposed to be a vein and a clamp was applied but it proved to be an artificial channel hollowed out of the connective tissue and communicating with a reservoir deep in the pelvis. The muscular layer was next divided and we came immediately on the bladder which was undoubtedly distended but not so much as expected. The blood seemed all to come from the right side of the bladder and on passing the fingers in that direction down into the pelvis immediately there welled up a large quantity of blood and urine, filling the line of incision and overflowing the abdominal wall, coming from a large cavity by the right side of the neck of the bladder. Quite one and a half pints of fluid had to be sponged out of the pelvis and after it seemed empty blood of a brighter tinge still continued to flow. On passing the hand down into the excavation it was clear that it was capable of holding the fluid that had already overflowed and as the bladder was still quite tense and full it was also plain that there was no rupture of that organ. At the bottom was felt the ischial or pubic ramus but quite denuded of all covering; the bare hard bone was there, but no line of fracture could be detected by the most careful searching with the finger nail. There is little doubt that when the perineum came in violent collision with the hard projecting earth the floor of the pelvis with the bladder was driven up into the abdomen and the right pubo-vesical ligament and all the soft structures were violently torn off the bone and forced up into the abdomen, and that at the same time the pudic vessels were torn across, and the urethra being also completely severed just at the tip of the prostate and behind the deep layer of the triangular ligament the blood and urine soon excavated for themselves a large chamber in this situation. Even here the pressure of the fluid was very high, for it had channelled out for itself a course through the muscular layer into the subcutanea, where it was found in the earlier part of the operation. As there was still bleeding going on the cavity was packed firmly with aseptic sponges. A small opening was next made in the bladder and with the finger inside and a catheter in the urethra the instrument was ultimately insinuated successfully into the bladder and tied in. A piece of indiarubber tubing just fitting the vesical opening conveyed the urine to a receptacle by the side of the patient; the wound was then partially closed and dressed and the patient was placed in bed.

On Jan. 14th the temperature was 101° F. and the pulse was 118. On the 22nd the temperature reached 103° and the pulse 104. The catheter was on the same day removed from the bladder as well as the tube from the vesical wound. There was considerable pain in the urethra and the glands of the right groin swelled up. This was due to a little pus that had formed in the abdominal wall close to the incision. This was incised on the 24th. Some lymphangitis occurred in the thigh but was allayed by lotions of acetate of lead. After this all went well and the opening in the bladder closed on Feb. 19th. Nine weeks after the accident the patient was quite convalescent and his urethra so far has given no trouble. He is a young man of fine physique and there is little doubt that his youth and strength have borne him over a very serious accident.

Hull.

PRE-MENSTRUAL PREGNANCY IN A GIRL AGED 13 YEARS.

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A GIRL, aged 13 years, was taken to the London Temperance Hospital by her mother early in January last suffering from abdominal pain and slight vaginal hæmorrhagic discharge. The breasts were well developed and contained milk. There was an abdominal tumour. The pubic hair was very slight in quantity. As vaginal examination was extremely painful an anæsthetic was given. It was found that an arm and the cord were presenting. There was no pulsation in the cord. Mr. T. G. Ward, the senior resident medical officer, performed version and removed a well-developed seven months child which showed no signs of life. Convalescence was without incident.

The interest of this case lies in the fact that impregnation took place before the outward signs of sexual maturity had manifested themselves. The evidence of the mother had been carefully taken; the girl herself was very positive that "she had never seen anything" and remained unshaken when questioned by the medical registrar or by the sister of the ward in private conversation; she was at school and professed entire ignorance of her condition; moreover, she positively denied any intimacy with man or boy.

There is nothing very remarkable in the age of this young mother. Plenty of cases of precocious maternity are to be met with. A girl, nine years old, gave birth to an infant in France; others of 11¾, 12, and 12½ years respectively are recorded in this country but in these cases previous menstruation had been noticed. The testimony of the patient and her mother in this instance is so definite as to make it quite certain that the usual monthly flow had never taken place. After all, is this very wonderful? The signs of sexual maturity in the female are well known to be development of the mammary glands, growth of pubic hair, and finally menstruation. Whilst these are the outward signs of sexual maturity cellular activity within the ovary has been proceeding regularly since the birth of the individual. A very interesting and instructive contribution towards the study of the fate of the ovum and Graafian follicle in pre-menstrual life has been published by Dr. T. G. Stevens in vol. xlv. of the Transactions of the Obstetrical Society for 1903. He there traces the history of the follicles and the series of changes they undergo, together with the fate of the ovum and its ultimate removal by the phagocytic agency of the cells of the membrana granulosa. This cellular activity within the ovary of the female is precisely similar to that which goes on within the testis of the male leading to the development of the spermatozoa.

Now sexual maturity depends for its onset upon a variety of causes, climate, race, nutrition, growth, &c., but there is reason to believe that our remote ancestors matured sexually much earlier and were much more prolific; and that with the advance of so-called civilisation the recognised nubile age has been made later and later, until at the present time it presents a grave sociological problem in more than one European country. In Central Africa it is by no means an uncommon thing for a girl to become a mother before she has menstruated, and in certain districts of India where early marriages are common the same thing has been recorded. Rachmakoff, a Russian physician, reports a case in a girl, aged 14 years. A traveller in the remoter regions of Australia told me of a case in his own camp of a girl, aged ten years, who had never menstruated and became pregnant. Metchnikoff in his book "The Nature of Man" quotes several cases also. In the warmer and Eastern climates then it would appear to be a well recognised fact and this doubtless because there is in those countries less sexual restraint, while in the West sexual maturity in both sexes comes later and when it does come environment, habit, training, and general oversight make early or precocious impregnation less probable, but that is all; precocity in the East is the rule, in the West it is the exception.

The life-history of the ovum and follicle in pre-menstrual life as traced by Dr. Stevens shows that maturity up to a point is constantly going on in those follicles which come to the surface, and when that point is reached retrograde changes take place in the infantile ovary. Now as the age of sexual maturity is being reached and as ovulation is regularly proceeding it is easy to see how impregnation might occur even though the outward and visible signs of sexual maturity be absent. The periodic occurrence of ovulation is most assuredly independent of menstruation and certainly precedes its initial onset and it is not difficult to see how the nervous and circulatory excitement attendant upon the act of coition may bring about the rupture of a ripe follicle and the resulting escape of the ovum.

Assuming the statement of this patient and her mother to be true (and there is no reason to doubt it, for every effort has been made to ascertain the exact facts)—viz., that she had never menstruated—then it is an added proof, were that needed, of the contention that ovulation and menstruation are not interdependent, though they may be coincidental.

There is something curiously akin to a pathological process in the menstruation of women. In every other instance discharges of blood, whether from the intestines, lungs, or kidneys, are evidence of disease. The analogue

in the higher vertebrates is "heat," but in very few is this accompanied by a discharge of blood, and where there is a slight staining the proportion of red blood corpuscles to white is very small, as in those macaque monkeys observed by Heape of Cambridge. In the case of "Johannah," the famous chimpanzee, whose menstrual history I have recorded elsewhere, I made a careful microscopical examination of the menstrual discharge and satisfied myself that the red corpuscles were comparatively small in number, though enough to tinge distinctly and to stain red the monthly flow; still, all these were under the artificial surroundings of captivity. Not only the attendant pain and copious loss in woman but the general and nervous disturbances occurring at these times are suggestive of a departure from the originally normal line. The amenorrhœa accompanying lactation is often regarded by women as a welcome condition of security from impregnation. This we know to be an error, for ovulation is proceeding with its accustomed regularity and impregnation may, and often does, take place. Furthermore, the development of the endometrium every month may be safely regarded as the preparation of the uterus for the implantation of an impregnated ovum and the menstruation may be considered as evidence of a failure of these anticipations.

It is quite likely that primitive woman never menstruated, at any rate as we know menstruation to-day, and there is reason to believe that this phenomenon, this heritage of woman, of which she is not proud and for which she is not grateful, has assumed its present proportions as a result of the almost universal practice, begun in the earliest ages, of restraining the excessive uberty of our primeval ancestors.

Curzon-street, W.

A CASE OF CHRONIC INTESTINAL OBSTRUCTION WITH PERFORATION OF THE SIGMOID FLEXURE.

BY GEORGE A. CLARKSON, F.R.C.S. ENG.

THE notes of the following case present one or two points of considerable interest. At the time of the first operation the history and the age of the patient led me to believe that I was dealing with a stricture of some part of the colon due to growth but the distension of the small intestine and cæcum was so great and the call for immediate drainage of the distended bowel was so urgent that no prolonged examination of the colon could be made. The subsequent sloughing and perforation of the sigmoid flexure probably occurred at the seat of obstruction, yet here no cause was obvious to account for the condition found. The gut, though in a condition little short of gangrene, was apparently not invaded by growth and the fact that no fæcal matter was found in it rather excluded the idea that retention of a scybalous mass of fæces at that point had given rise to inflammatory softening and perforation of its coats.

The patient, a woman, aged 52 years, had suffered from disease of the outer surface of the acetabulum for 12 years and the sinuses on the outer side of the right hip had healed after a free exploration and scraping in May, 1903. In the spring of 1904 she began to be subject to occasional attacks of vomiting, accompanied by abdominal pain, distension, and constipation, but these attacks were relieved from time to time by aperients and enemata. On May 9th she was seized with a severer attack than usual. The bowels were at first relieved and the sickness would stop for 12 hours at a time but invariably returned again. The patient was kept in bed, put on a fluid diet, and saline aperients and enemata were given with some result. A rectal examination revealed no stricture within reach of the finger nor could anything be felt through the abdominal walls to localise the seat of obstruction. On the 15th the symptoms became urgent, the vomiting being persistent and copious but not offensive in smell, the abdominal distension became very great, and there was obviously more or less complete obstruction. Enemata given through a long rectal tube produced no effect, so the patient was removed without delay to a surgical home. The operation was carried out in the evening. The abdomen was opened in the middle line below the umbilicus. Enormous distension of the small intestine and cæcum was met with and as the transverse and descending colon appeared less distended and the indication to drain the bowel with as little delay as possible was urgent the wound was closed and another small incision was made over the cæcum, which was drawn out, opened, and a Paul's tube tied in. Following the operation there was a little vomiting of a stercoraceous character but the cæcal opening gave great relief and the acute symptoms subsided. At the end of a fortnight the patient was able to be removed home. Enemata were subsequently given from time to time and occasionally brought away small scybalous masses.

On the afternoon of June 11th the patient was suddenly taken ill with intense pain in the left inguinal region and when I saw her was extremely collapsed, with drawn features, cold extremities, and thready pulse. Subcutaneous injections of strychnine with a little morphine were given and she gradually rallied, symptoms of an acute localised peritonitis quickly manifesting themselves. A diagnosis of intestinal perforation was made and on the 15th an incision similar to that for inguinal colotomy was made over the area of pain and resistance. On opening the abdomen some very foul-smelling pus welled up and the abscess cavity having been thoroughly swabbed out the sigmoid flexure was seen plastered over with thick lymph and with a perforation on its anterior surface of the size of a shilling. The coats of the bowel were softened, black, and gangrenous and in bringing it forward it tore almost across. The wound was therefore enlarged in an upward direction and the bowel was slit up with scissors till its walls appeared unaffected by the changes below and would allow of its being stitched to the skin which was then done. The whole condition seemed to be an acutely inflammatory one. The abscess cavity was again swabbed out and then packed with iodoform gauze, an indiarubber tube of large calibre being passed into the colon.

The patient stood the operation well. The discharge was most offensive for some days but the cavity contracted quickly and at the end of a month the opening differed but little from an ordinary colotomy opening and it acted well. As the cæcal opening became an annoyance to the patient when she began to get about again owing to the liquidity of the discharge, on August 11th, under ether, the mucous membrane was separated from the skin and the opening closed. At the time of writing (March, 1905) the patient finds no difficulty in controlling the artificial anus and she is able to get about out of doors and to resume her ordinary domestic duties at home.

Leicester.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A NOTE ON THE ABDOMINAL INCISIONS FOR THE EXPLORATION OF THE APPENDIX AND PERFORATED ULCER OF THE STOMACH.

BY CUTHBERT S. WALLACE, M.B., B.S. LOND., F.R.C.S. ENG.,

SURGEON TO OUT-PATIENTS AT ST. THOMAS'S HOSPITAL; ASSISTANT SURGEON TO THE EAST LONDON HOSPITAL FOR CHILDREN.

The incision for exploration of the appendix.—The two abdominal incisions that are most in vogue for removal of the appendix—namely, that of McBurney and that through the rectus sheath—have their advantages and disadvantages. The McBurney incision is cramped and if difficulties are encountered gives poor access even if strongly spanned by assistants. It is, on the other hand, easily and quickly closed. The rectus sheath incision gives a good view and can be enlarged without difficulty to any extent; it is, however, often difficult to close owing to the tendency of the layers behind the rectus muscle to retract towards the iliac crest. The following modification seems to combine some of the advantages of both incisions. The rectus sheath is entered towards its outer side by the usual vertical incision. The muscle is then retracted inwards and the posterior wall of the sheath is exposed. As a rule two nerves are seen running transversely inwards about one inch apart. The mid-point between these is selected and the

peritoneal cavity is entered by an incision one inch long transverse to the body axis and parallel to the nerves. This incision is easily closed since the natural tension of the parts approximates the edges. Should difficulties be encountered in the removal of the appendix and a large incision be required it can be obtained by the usual vertical incision in the posterior rectus sheath.

The incision for perforated ulcer of the stomach.—In many cases of perforating ulcer of the stomach or the duodenum it is a matter of doubt as to whether the pelvis has become infected or not. Even after the usual epigastric incision the same doubt remains, since the state of the middle area of the abdomen is no criterion as to that of the lower portion. The only method of settling the point is by making an incision in the hypogastrium. Should this be made after the upper incision there is danger of infecting the pelvis if this prove clean, since hands and instruments are already soiled. It therefore seems advisable in cases of doubt to make the hypogastric incision first. The state of the pelvis can then be ascertained and if found clean the wound can be closed. If the contrary prove to be the case the lower wound can be used in the process of cleansing the peritoneum. The primary lower incision is also of service in determining the condition of the appendix when there is doubt as to whether the appendix region or the upper part of the intestinal tract is at fault.

Upper Wimpole-street, W.

A CASE OF ACUTE IODINE POISONING WITH FATAL RESULT.

BY E. DONALDSON-SIM, M.R.C.S. ENG., L.R.C.P. LOND.,
SENIOR RESIDENT MEDICAL OFFICER AT THE GUEST HOSPITAL, DUDLEY.

A MAN, aged 52 years, was admitted to the Guest Hospital, Dudley, on the morning of Jan. 25th, 1905, with an outward dislocation of the right foot and a simple fracture of the right fibula. He had been a hard drinker for some years and was drunk at the time of the accident. There was no evidence of definite cardiac disease on examination of the heart and no anasarca was present. No specimen of the urine was obtained. The dislocation was reduced under chloroform soon after admission. On the morning of the 26th the patient showed signs of threatening delirium tremens. He was placed on a bromide mixture and, of course, was on milk diet. He complained of pain in the left side of the chest but no sign of injury or disease was found on examination. Orders were given, however, to paint the painful area with liniment of iodine. When about to do this (at 7.30 P.M.) the nurse placed a bottle containing liniment of iodine on the patient's locker and then left the patient for certainly not more than a minute. During this short period, however, the patient seized the bottle of iodine, uncorked it, and gulped down the whole of the contents, about four ounces. I was in the ward at the time and hearing the other patients call out I turned round in time to see the patient replace the empty bottle on the locker. I at once took steps to wash out the stomach, but in order to do this we were forced to anæsthetise lightly the patient with chloroform. The stomach was then thoroughly washed out until the returning boric lotion was quite clear. On completion of this operation the patient promptly regained consciousness, his pulse was good, and his condition seemed satisfactory. There was no dyspnœa nor was there vomiting or purging. In about an hour's time the pulse became very feeble, the extremities were cold and blue, and the face was cyanosed; respiration was easy but the patient kept expectorating and complained of some pain in the epigastric region. Five minims of solution of strychnine were injected hypodermically and repeated in two hours as there was no improvement. Hot water bottles were applied and one ounce of brandy was given per rectum. Two drachms of bicarbonate of sodium were given by the mouth in a little water and diluent drinks were ordered. In spite of treatment, however, the patient died from cardiac failure at 11.45 P.M. The coroner, unfortunately, did not order a post-mortem examination to be made.

The case is of interest on account of the rarity of acute iodine poisoning and on account of the rapidity with which death followed the swallowing of the poison in spite of energetic treatment. Probably this was partly due to the patient having been in a low condition of health on account of his drunken habits.

Dudley.

A Mirror
OF
HOSPITAL PRACTICE,
BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv., Proœmium.

POPLAR HOSPITAL.

A CASE OF SEROUS PLEURAL EFFUSION FOLLOWING ACUTE RHEUMATIC ARTHRITIS AND PERICARDITIS.

(Under the care of Dr. CECIL WALL.)

FOR the notes of the case we are indebted to Mr. A. C. Dixon, house physician.

A man, aged 44 years, was admitted into the Poplar Hospital under the care of Dr. Cecil Wall on August 19th, 1904. The patient had been ill for 14 days with acute rheumatic arthritis. There was nothing of importance in his previous history or in his family history; he had not previously suffered from rheumatism. On admission his temperature was 102·4° F.; many joints were hot, red, tender, and swollen, and there was much sweating. The heart was not enlarged but a systolic murmur was heard at the apex and in the axilla accompanying a weak first sound. He was put on full doses of salicylate of sodium and the temperature fell rapidly and reached normal on August 22nd. On the 23rd the temperature rose to 100° and loud to-and-fro pericardial friction was heard; during the next few days the temperature continued to rise and reached the maximum of 104° on the 29th. Between these two dates a large pericardial effusion developed and the patient became delirious. After the 29th the temperature began to fall and the pericardial effusion to lessen. On Sept. 6th the area of cardiac dulness was only slightly larger than normal but for some days the temperature remained between 100° and 101°. On Sept. 7th and 10th the patient had syncopal attacks from which he recovered under the influence of stimulants. Between the 6th and the 15th the pyrexia continued, there was a good deal of diarrhœa, and the patient sank into a typhoid state. Tested on Sept. 14th the blood did not give Widal's reaction. On the 13th signs of pleurisy at the right base developed and an effusion formed of which 29 ounces were evacuated on the 16th. A report upon this fluid is appended. The temperature now gradually fell to normal and on the 20th there was no evidence of pleurisy or of effusion on the right side. Pleural friction, however, was heard in the left axilla. At the beginning of October a fresh effusion formed in the right pleural cavity and 11 ounces were removed by aspiration on Oct. 4th. The signs, however, at the right base persisted and the temperature again rose. An exploring syringe was again inserted on the 21st but only three ounces of fluid were obtained. After this the signs cleared up, the temperature became normal, and the patient made rapid progress towards recovery. He was discharged to a convalescent home on Nov. 22nd. On discharge and when seen about a month later the heart seemed a little enlarged but no murmurs could be heard. In all other respects he seemed perfectly well.

Report on the pleuritic fluid by Miss H. L. BILLETT *of the Laboratory of Pathology and Public Health.*—"Microscopical examination of the centrifugalised deposit from the fluid showed it to consist chiefly of red blood discs, with a fair number of leucocytes and a small number of endothelial cells. The blood discs are of good colour and the leucocytes appear to be chiefly of the polymorphonuclear type. The coagulum shows a similar composition with the addition of fibrin. No tubercle bacilli have been found in a stained specimen. Plate cultivations were made from the centrifugalised deposit, and an organism was isolated which is similar in microscopical appearance to the rheumatic diplococcus, appearing in pairs, groups, and

short chains. This was inoculated into various media; a characteristic fine growth was seen on the solid media, and the production of acid was noted in most of the liquid media, with a sedimentary growth. It does not liquefy gelatine; this organism is thus seen to correspond in many respects with the characters of the diplococcus of acute rheumatism."

Report on the fluid obtained on Oct. 5th by Dr. C. E. HAM, *chemical pathologist to the London Hospital.*—"The following is a report on pleural fluid sent to me on Oct. 5th. Colour: very pale straw; specific gravity 1018; reaction to litmus very faintly alkaline. Chemical examination: proteid (albumin and globulin) about 1·5 per cent. and a substance which reduced Fehling's solution slightly. No formic acid and no lactic acid could be detected. Microscopically practically nothing was seen under oil immersion except a few leucocytes."

Remarks by Dr. WALL.—It is generally accepted that rheumatism may cause pleurisy but it is less commonly held that it may lead to the formation of a clear pleural effusion. In this case bacteriological evidence supports the clinical diagnosis. Dr. G. A. Gibson, in a lecture published this year,[1] says that he is not aware of any case of pleural effusion from which the micrococcus of rheumatism has been isolated. I have not myself been able to find a report of any such case and consequently think that this instance is worthy of record.

DAVID LEWIS NORTHERN HOSPITAL, LIVERPOOL.

A CASE OF RUPTURED KIDNEY AND LIVER; OPERATION; RECOVERY.

(Under the care of Mr. K. W. MONSARRAT.)

A MAN, aged 28 years, was admitted on Nov. 26th at 3 P.M. to the Northern Hospital immediately after an accident in which he had been crushed between a wagon and a wall. The patient was very pallid, breathing heavily. His pulse was slow (66 per minute) and he was complaining of great pain in the abdomen. There were no external marks of injury. Palpation of the abdomen revealed nothing, being extremely painful and resistant, but on percussion marked dulness in the left flank was elicited and palpation there caused considerable pain. A catheter was passed and the urine was found to contain blood. Rupture of the left kidney was diagnosed. The pulse-rate increased steadily after admission. At 4.15 P.M. two pints of normal saline solution were injected intravenously previously to operation.

Under ether an oblique incision was made in the left flank, just below the ribs; blood was present in the perinephric tissue. An irregular laceration two inches in length was found on the anterior surface of the kidney at its superior pole; this was stitched up by means of three silk sutures. The peritoneum was incised to the outer side of the descending colon, whereupon a quantity of blood and clots escaped. The hand was then introduced into the peritoneal cavity and the spleen was explored and found to be normal. The hand was then passed across the abdominal cavity and a laceration of the liver was discovered. The lumbar wound was closed, a glass drainage-tube being passed down to the kidney. An anterior incision below the ribs on the right side exposed the liver. The laceration was found on its anterior surface, four or five inches in length, ending on the anterior border about one inch to the outer side of the gall-bladder. Another small tear was present on the anterior border external to the former. The blood and clots were removed as far as possible from the peritoneal cavity and the laceration was packed with gauze; it was not sutured. The parietal incision was closed by through-and-through sutures of silk-worm gut and the gauze packing was brought through its upper extremity. Two pints of normal saline solution were injected intravenously and a quarter of a grain of morphine and $\frac{1}{150}$th of a grain of atropine sulphate were administered hypodermically before the patient left the table.

On the next day the patient had not quite recovered from the shock and the collapse. The wounds were dressed and the glass tube to the kidney was replaced by rubber drainage tubing. The gauze drain was removed from the liver as hæmorrhage appeared to have ceased. Atropine sulphate ($\frac{1}{150}$th of a grain) was given hypodermically every three hours. On Nov. 28th one grain of cocaine was given every hour because of severe vomiting. Five grains of calomel having been given without result an enema of gruel and turpentine was ordered. The atropine was discontinued and strychnine (four minims every four hours) was substituted. The pulse was feeble, the face was flushed, and the pupils were dilated. The patient complained of a great deal of pain over the wounds. On Nov. 29th another gruel and turpentine enema was given with an excellent result, the general condition being decidedly better in consequence. Blood was now absent from the urine. On Dec. 2nd the condition had greatly improved, except for a superficial skin infection of both wounds, for which boric foments were applied every four hours. By Dec. 16th the patient was well on the way to recovery, complete restoration to health being delayed by the complication already referred to.

Remarks by Mr. MONSARRAT.—The chief complaint made by the patient on admission was agonising pain across the back at the level of the upper lumbar spines. During exploration of the kidney blood was seen to be present in the peritoneal cavity and the peritoneum was incised. Through this incision the spleen, the liver, and the other abdominal organs were examined with the hand and the long tear in the liver was felt with the fingers. Hæmorrhage from the tear in the liver was readily checked by gauze packing; in addition to the large wound there were several smaller wounds, only one of which, however, involved the peritoneal covering.

Regarding the indications for operation in such a case, in my opinion where definite signs of rupture of the kidney are present operation is always advisable. Agonising lumbar pain is usually present in a characteristic manner in contusion and rupture of the liver and in this case the signs of hæmorrhage into the peritoneal cavity were sufficiently distinct.

[1] Brit. Med. Jour., Jan. 7th, 1905.

Medical Societies.

PATHOLOGICAL SOCIETY OF LONDON.

Some Experiments in Connexion with Stimulins.—Demonstration of Cultural Forms of the Leishman Body.

A LABORATORY meeting of this society was held at the Royal Army Medical College, Victoria Embankment, on March 21st, Sir JOHN BURDON SANDERSON, the President, being in the chair.

Major W. B. LEISHMAN, R.A.M.C., described a series of experiments demonstrating the Property possessed by Typhoid and Malta Fever Sera of stimulating the Phagocytic Power of Leucocytes derived from Normal Blood towards the Bacillus Typhosus and Micrococcus Melitensis respectively. The first series of experiments were conducted *in vitro* by Major Leishman's original method of quantitatively estimating the phagocytic power and demonstrated that the addition to normal blood of a very small amount of immune serum, whether derived from a convalescent patient or from an immunised animal, increased the phagocytic power of the normal leucocytes to a very marked degree. The addition of a similar amount of normal serum or of serum derived from men or animals immunised with other germs had either a negative or an inhibitory effect upon phagocytosis. This stimulating effect was found to be exercised only in the case of the particular germ which had been employed in immunisation. It was further shown that the stimulating properties of these sera were not destroyed or diminished by heating to 60° C. for 15 minutes. In another series of experiments the modification of Major Leishman's method employed by Wright and Douglas in their work on opsonins was adopted. In these the normal corpuscles were freed from the citrated plasma by centrifugalisation and repeated washing in normal salt solution and all the sera subsequently added to these washed corpuscles had been previously heated to 60° C. for 15 minutes. In this way the thermo-labile opsonins, if present in these sera, had been destroyed and the possibility of the stimulin effect being, in part or altogether, due to opsonic action was excluded. In this series immune sera derived from a case of enteric fever and from a rabbit immunised with bacillus typhosus were found to exhibit stimulating properties similar to those of the sera

tested in the first series. In a further experiment an attempt was made to determine whether the increased phagocytosis following on the addition of the immune serum was due to the action of the serum upon the bacteria or was caused by a direct stimulation of the leucocytes. In this experiment the emulsion of living germs employed was divided into three equal parts: the first was digested for one hour at 37° C. with heated typhoid serum, the second was similarly treated with heated normal serum, while the third was untreated. The germs which had been digested with the sera were then freed from these sera by washing and suspended in normal saline solution. A parallel series of experiments was conducted with these three emulsions. The results appeared to show that the stimulins acted directly upon the leucocytes. The above experiments were then contrasted with those previously described by Metchnikoff, Gengou, Besredka, and others, but as the latter were conducted *in vivo* upon animals whose peritoneal fluid or exudates were withdrawn and studied accurate comparison was not possible. Major Leishman, however, concluded that the stimulating action demonstrated in his experiments was due to the presence in the immune sera of the "stimulins" described by Metchnikoff and others. He pointed out, however, that he had obtained no evidence of any stimulating effect from the addition of normal serum such as had been described by those authorities. The conclusions which he drew were, first, that sera derived from cases of typhoid or Malta fever or from animals immunised with living cultures of these organisms appeared to contain a substance—stimulin—capable of stimulating normal phagocytosis. Secondly, these stimulins were specific—i.e., they only induced increased phagocytosis of the germ which had been employed in immunisation. Thirdly, they were thermostable, withstanding a temperature of 60° C. for 15 minutes. Fourthly, no evidence of a stimulin effect was obtained from the normal serum of man or animals. Fifthly, although their action might possibly be reinforced by that of the agglutinins or the immune body they were not identical with either of these substances. Sixthly, they appeared to act by direct stimulation of the leucocytes.

Major LEISHMAN then gave a demonstration of the Cultural Forms of the Leishman Body. He showed a series of microscopic specimens illustrating the changes which these parasites undergo in artificial culture, eventuating in the development of a flagellated organism closely resembling a trypanosoma. (The original cultures were obtained by Captain J. C. B. Statham, R.A.M.C., at Netley.)

CHELSEA CLINICAL SOCIETY.

Chronic Constipation and its Medical and Surgical Treatment.

THE annual clinical debate of this society was held at the Chelsea Dispensary, Manor-street, King's-road, London, on March 14th, Dr. T. VINCENT DICKINSON, the President, being in the chair.

Mr. W. ARBUTHNOT LANE in opening the debate on Chronic Constipation and its Medical and Surgical Treatment first described the conditions of the viscera consequent on imperfect evacuation of the large bowel. In the large majority of cases such a condition was associated with the symptoms properly comprehended under the term "constipation"; in a small proportion of cases, however, the patient might have a daily evacuation but might still have a loaded large bowel. The sufferer might obtain from the overflow of the loaded large bowel a daily action which was usually solid but might be fluid and consequently there might be no complaint of constipation. When children were fed unsuitably the intestines, and particularly the large bowel, might become distended with gas, rendering the whole of the abdomen abnormally prominent. The cæcum and the ascending colon appeared to suffer most severely and the transverse colon became distended and elongated in a downward direction as a consequence. Mr. Lane then referred to a paper which he had published in August, 1893, in which he called attention to the presence of fluid associated with distension of the intestines resulting from malnutrition, the large bowel becoming more or less inflamed, sufficient to produce a distinct peritonitis as manifested by the effusion. The appendix shared in the inflammatory process and might do so sufficiently to become attached in the position in which it happened to lie at the time. If the condition occurred early in life the appendix might become attached to the posterior abdominal wall in relation to the liver and might become considerably elongated by the forcible downward displacement of the cæcum in consequence of the development of that organ and its elongation from distension by its contents. Such fixation of the appendix might not give rise to any obvious symptom but it left the organ more or less damaged functionally and capable of becoming obstructed and acutely inflamed at any time. Appendicitis was in the first instance directly consequent upon the condition of distension and inflammation of the cæcum at some period or other excepting those rare cases where a foreign body was the cause. Appendicitis, therefore, practically never existed except as a consequence of the overloading of the intestinal cesspool and must of necessity have been associated at some time or other with the results of such distension. The forcing down of the cæcum and transverse colon was much helped by the sedentary position assumed almost universally during defæcation in civilised communities. The inflammation of the cæcum and the ascending colon consequent on their excessive distension produced an adhesive process between the outer wall of the bowel and the peritoneum with which it came into contact. The sigmoid flexure was driven down and obstructed and ultimately might become so contracted up in consequence of the adhesive process that it ceased to be a loop and formed a straight conduit. One most conspicuous clinical symptom was a fulness and tenderness in the region of the cæcum, which organ in the erect and sitting posture in these cases of any severity reached well into the true pelvis. Most pain was felt when the cæcum lay upon a firm background such as the iliac fossa or pelvic brim. The tenderness extended upwards to the hepatic flexure and pressure on the loin below the last rib caused pain partly due to the strain exerted upon that area by the loaded bowel when the trunk was in the erect position and partly due to the thrusting in an upward and backward direction of the upper limit of the ascending colon. As the transverse colon became frequently adherent to the ascending colon the area of the tenderness of the one merged into that of the other. The patient was liable to attacks of pain in the region occupied by the inflamed and dilated cæcum and such attacks were frequently mistaken for inflammation of the appendix alone. In consequence the appendix which might or might not be inflamed was frequently removed for the relief of such conditions of acute distension, the patient, however, after such operation obtaining only the temporary relief that was afforded by the prolonged assumption of the resting posture which was favourable to the emptying of the intestinal cesspool and by the care and attention which his bowels received during the period of convalescence. When such a patient again resumed the erect posture he soon complained again of the troubles from which he suffered before his appendix was removed. That condition of the large bowel was almost the only cause for the pain which the patient experienced after these unsuccessful appendicular operations excepting such conditions as might be due to an incorrect diagnosis in the first instance. That, in Mr. Lane's opinion, was exactly what might be expected from a knowledge of the causation of disease of the appendix. That the operation of removal of the appendix failed not infrequently to relieve patients of their painful symptoms was well known to all and no array of statistics pointing to a contrary conclusion to that could be relied upon. It was possible at the time of operation to gauge fairly accurately the amount of success that would follow upon the removal of an appendix and if necessary upon the division of such bands as might be constricting the lumen of the cæcum and of the ascending colon or hitching up and obstructing the hepatic flexure. Mr. Lane observed that the failure to relieve permanently these patients of their symptoms in a number of so-called cases of appendicitis was forcing itself daily more and more convincingly upon the profession and was calling forth a more thorough study of the physical conditions which produced appendical inflammation and which were associated with it. It seemed to him that the consulting physician and the general practitioner could help the surgeon most materially by giving an account of their experiences of the subsequent history of these cases after operation. In certain cases of chronic constipation the patients referred all the pain to the epigastrium or to the umbilical region and the many symptoms

comprised under the term indigestion might be present in an aggravated form. Mr. Lane then explained in detail the symptoms due to the absorption of toxins tending to produce an appearance in the patient of premature senility and described how the skin became dry, thin, and loose, the secretions acquiring a nasty offensive smell in the flexures. One of the most conspicuous consequences was the loss of fat and once that commenced it afforded the best indication that the patient was going rapidly downhill. In considering the question of treatment he did not propose to deal with any form other than operative, since he assumed that everything short of operative interference had been tried. When it became apparent that something must be done beyond drug and other such treatment the question resolved itself into whether an attempt should not be made to liberate the bowel by the division of bands or adhesions or whether it would not be better to establish direct continuity between the lower end of the ileum and the termination of the large bowel. In regard to the operative procedure itself Mr. Lane explained that he divided the ileum about six to eight inches from the cæcum and then connected the proximal end with the sigmoid flexure or rectum. The operation was simple and the results were excellent provided the case had not been allowed to drift on till adhesions and dilatation of the small intestine had occurred and considerable dilatation of the stomach had taken place. Many had objected to the operation on the assumption that the patient would afterwards be affected by persistent chronic diarrhœa. Such was not the case, for in a large proportion of the cases the patients had still for some considerable time to take drugs or by preference use glycerine enemata.

The PRESIDENT said that the remarks made by Mr. Lane forcibly reminded them that the treatment of chronic constipation did not consist alone in the giving of aperient drugs and, apart from its surgical treatment, its cure was not to be found in any one panacea. He then proceeded to give a brief survey of the causes of chronic constipation. The causes of chronic constipation might be primarily divided into two groups, intrinsic and extrinsic. Intrinsic causes might be further divided into: muscular atony, glandular atony, hepatic inefficiency, chronic colitis, and mechanical causes, organic and functional. The President discussed these seriatim and in the course of his remarks mentioned that small doses of castor oil seemed to act better than any other therapeutic measure in relieving constipation and curing the disease. By small doses he meant ten minims every four hours or a drachm night and morning and it might usefully be combined with belladonna. Kussmaul introduced the injection of olive oil into the colon as a cure for that complaint, from three to ten ounces of warm olive oil being employed every night at bedtime which should be retained during the night. In order to effect that, the oil should not be injected through a Higginson's syringe but by means of a douche can suspended above the bed and connected with a nozzle and indiarubber tube of large calibre. After a time the injection might be used on alternate nights and the patient would probably find that he obtained an evacuation each morning; the intervals could be then lengthened until cure was effected. He also pointed out that an excess of lime salts in drinking water was one of the most important of the extrinsic causes of constipation. He thought, too, that lack of sugar and lack of water might perhaps play a subsidiary part in the causation of chronic constipation, for some people drank too little water or fluid of any kind. The President concluded by saying that in the future the cure of constipation might be effected by surgery rather than by medicine but until that happy time arrived there would be many who would echo the words of mine host of the Garter Inn set forth in the *Merry Wives of Windsor*: "Shall I lose my doctor? No; he gives me the potions and the motions."

Dr. W. H. GODDARD said that on the existence or non-existence of the pathological processes described by Mr. Lane depended the argument in regard to chronic constipation. Dr. Goddard said that for the last three years he had had considerable experience in cases of chronic constipation and had been present at many surgical operations undertaken for its relief. He had seen the conditions described by Mr. Lane and considered his conclusions logical and correct, for they were borne out by the success of the surgical methods which he advocated. The treatment initiated by Mr. Lane was not universally accepted by his brother consultants; indeed, one eminent consultant had given denial categorically to Mr. Lane's teaching and method. When Dr. Goddard read that gentleman's statement he was much exercised in his mind to know what his objections could be and after careful reflection he came to the conclusion that that authority had attributed, rightly or wrongly, such advantageous functions to the colon that it would be unjustifiable to interfere with it. That conclusion led Dr. Goddard to ask himself, What then were the functions of the normal colon? Continuing, Dr. Goddard stated that he had been experimenting in Paris during the last few months on the living colon of the dog and the rabbit. He set himself to determine those functions under four heads: 1. As to the peristalsis of the colon. Was it peculiar to the colon? 2. As to the digestion of fat carried on by the agency of bacteria known to abound in the cæcum. 3. As to the absorption of fluid from the fæcal mass. 4. As to the digestion of cellulose. He would briefly describe his experiments. He purged both a dog and a rabbit and administered to them A.C.E. mixture. When the abdomen was opened he made a small incision in the posterior part of the ascending colon and through it he passed a small indiarubber ball to which was fitted a tube fitted with a stop-cock. The elastic ball was chosen in consequence of its collapsibility, so that it could be passed through a comparatively small orifice and also because it could be easily inflated and deflated to suit the altering calibre of the large gut. He noticed that the wall of the intestine contracted on the ball and it was not difficult to see that both the external longitudinal and the internal circular muscular coats contracted together at the same instant of time. To make sure of that particular, however, he applied an enterograph which confirmed his observation. He also observed (in the case of the rabbit the intestine of which was more delicately responsive than that of the dog) that in front of the ball there was a contraction of the intestinal wall and so marked was this that it might be compared to a constrictor or sphincter. The combined effects of these two processes were evidently to insure a twisting or churning movement on the ball. After a time the sphincter gave way and the ball was carried upwards or onwards, only to meet with a repetition of the process at the hepatic flexure of the intestine and then again in the middle of the transverse colon but he could not follow its action further. The text-books told them that first one coat of the intestine and then the other contracted but it was clear they contracted together, the outer or longitudinal muscular coat acting as an adjuvant to the inner coat by pressing tightly upon it. As to the digestion of fat, he fed a dog on diet containing a slight excess of fat of known weight. He obtained the fæces arising from this food. He boiled the fæces first in alcohol and subsequently in ether, the ether was evaporated off from the product, and the fat and other compounds soluble in ether were weighed. He then removed the ileum of the same dog from its normal position and implanted it into the upper rectum. When the dog had recovered from the operation he administered to it a diet exactly similar to what it had previously received in its normal condition. He found on weighing the fat resulting from its fæces that the average quantity of six experiments was 12 per cent. more than in the first experiment, hence 12 per cent. of fat was digested by the cæcum. Concerning the absorption of fluid from the fæcal mass, in the last experiment it was noted that during the first 15 days after the operation the fæces were passed in a liquid condition, resembling the fæcal fluid mass normally found in the ileum. But subsequently to that period the fæces gradually regained their normal consistency. In regard to cellulose, he regretted to say that his experiments were not yet completed but he thought that they might accept the conclusion of the German agricultural chemists—viz., that cellulose was digested by the large intestine. Those, then, were the functions of the large intestine of the dog and of the rabbit and he presumed that they might in a great degree reason from the colon of the dog to that of man. Although they had seen the large intestine to possess great functions and great advantages he could not conceive them to be very great. Indeed, he believed that did the necessity arise life could be maintained without it—that man could live without a colon. Let them consider what exactly would be their loss. Its peristalsis? No; for it would not be required. Loss of fat? 12 per cent. of the whole amount digested was not a great loss, even if they omitted the possible presumption that the small intestine might even in some degree do the work of the large intestine in that respect just as occurred

in the case of the absorption of fluid when the large intestine was rendered functionless. Absorption of fluid from the fæcal mass? No; for they had seen in the dog and, indeed, in man that after a certain lapse of time the small intestine became equal to that task. Digestion of cellulose? Yes; but cellulose did not largely enter into their diet and it was by no means a necessary part of it. Therefore they might say there would not be any great loss. If man could live without his normal colon he certainly could do so in the case of chronic constipation, for there they found the colon was disorganised, and if it had any advantages at all they must be less than in the normal condition and its very slight aid to the human economy was more than counterbalanced by that one fact—namely, that in chronic constipation they had a portion of the colon, the cæcum, acting as a cesspool where the fæces were stagnating and undergoing chemical decomposition and producing toxic substances which enter into the blood stream and sap the vitality of the patient and speedily send him to his grave. He supposed general practitioners would rather attempt the treatment of chronic constipation by drugs and other methods than by surgical operation. Drugs might be useful in that class of cases of chronic constipation which had not yet led to structural alterations within the abdomen and into their treatment he did not purpose to enter, but however efficacious the medicines they employed he thought the majority of even those cases would sooner or later exhibit pathological changes and, given pathological structural changes, drugs could avail nothing. Indeed, they were worse than useless, for they delayed the surgical operative measures which in the end must be adopted. Hence, in the manner he described operative interference was now the only method remaining.

Mr. J. F. PALMER said that they welcomed a radical treatment of chronic constipation in certain cases as suggested by Mr. Lane which would in a degree restore the normal condition of the parts and practically enable the patient to begin his intestinal life afresh, and then was the time for the medical man to impress upon his patient the importance of cultivating the necessary habits of regularity to secure success in overcoming the trouble. In regard to therapeutic measures Mr. Palmer advocated warm water and warm olive oil per rectum either alone or both together. He suggested that people should eat enough both in quantity and variety and should drink in proportion, for a sufficiency of fluid was of the first importance. He described the beneficial effects of belladonna and gave details of the action of nux vomica.

After Dr. SEYMOUR TAYLOR had addressed a few words to the meeting the debate was adjourned to March 21st.

BRITISH LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL ASSOCIATION.

Exhibition of Specimens.—Discussion on Nasal Obstruction and Mouth Breathing.

A GENERAL meeting of this society was held on March 10th at the rooms of the Medical Society, 11, Chandos-street, W., Mr. W. J. CHICHELE NOURSE, the President, being in the chair.

The PRESIDENT said that the illuminated address which was to be presented to Señor Manuel Garcia was on view. It consisted of a border and lettering in the Italian style of the sixteenth century with two miniatures—one in the initial representing Music and the other in the medallion at the foot depicting Orpheus playing to the beasts. The work was designed and executed on vellum by Mr. Charles Randal.

Dr. SAMUEL BRADFORD showed a case of Excision of the Superior Maxillary Bone for Epithelioma of the Antrum in a boy.

Dr. V. H. WYATT WINGRAVE showed a case of Paralysis of the Left Vocal Cord in a youth aged 20 years.

Dr. ANDREW WYLIE showed a case of Papilloma in the Larynx under treatment by the galvano-cautery.

A discussion then took place on a paper which had been read at a previous meeting by Dr. J. SIM WALLACE on Nasal Obstruction and Mouth Breathing.

Dr. HARRY CAMPBELL said that the chief point in the paper seemed to be Dr. Wallace's firm belief that the diet of children was at present too soft. The jaws were therefore insufficiently exercised and in consequence of this the maxillary apparatus as well as the adjacent chambers of the nose and the naso-pharynx failed to develop properly, another result of this faulty dietary being that indigestion was set up and this led secondarily to inflammation in the nasal cavity, the naso-pharynx, and the tonsils. With these two propositions Dr. Campbell declared himself to be in complete agreement and said that if the nasal chambers did not develop properly there would obviously be a predisposition to nasal obstruction. He further suggested that the rhythmical contraction of the pterygoid muscles must tend to stimulate the flow of blood in the naso-pharynx and that deficient exercise of these muscles must lead to stagnation of blood and lymph in the naso-pharyngeal mucous membrane which was thereby predisposed to disease. Children who were improperly fed also had a tendency to suffer from intestinal sepsis and thus an unhealthy condition of the alimentary tract was set up, bacteria abounded, and the absorption of poisons produced by them as well of abnormal digestive products brought about a chronic toxæmia. One of the results of that toxæmia was a diminished power of resistance to disease and a tendency to inflammation of the mucous membranes—a condition which might be called the catarrhal diathesis. These children were very likely to suffer from enteritis, bronchitis, pharyngitis, and rhinitis. Rhinitis thus induced was a potent factor in nasal obstruction, especially when the nasal passages were ill developed in consequence of the insufficient use of the jaws. Adenoids in children he attributed also to the causes already mentioned—namely, sluggish circulation in the lining membrane of the naso-pharynx and irritation of it by blood charged with toxic products derived from the intestines. Primary nasal obstruction in children and the nasal obstruction secondary to adenoids were therefore both of them essentially dietetic conditions.

Mr. MAYO COLLIER said that he could not altogether agree with the etiology of mouth breathing as explained by Dr. Wallace and Dr. Campbell. He did not think that malformations of the upper jaw and palate in children were due to the nature of their food. In India, China, and other parts of the East there was a population of at least 400,000,000 persons who, he was credibly informed, from the time of birth until they were laid in their graves never consumed anything but rice, curry, and fruits, and if that were so it might be expected that the most exaggerated examples of malformations of the upper jaw and destructive conditions of the teeth would be found amongst them. Instead of the causes assigned by Dr. Wallace and Dr. Campbell he thought that something else must be looked for, and this something else he believed would be found in the term "gout" or "gouti ness" which in its broad application covered many affections. When it was considered that children were born with perfect upper and lower arches, that their palates were flat like a dessert spoon, that the nasal chambers were well formed, and that the jaws had never been used at all, the inference was that there must be some distinct and emphatic cause why things went wrong in after-life. The alterations in the palate and mouth which were being discussed were not found until the individual attained 10 or 15 or even 20 years of age. In a paper which he read eight or ten years ago, as a result of the examination of some 1050 cases, he pointed out that distorted upper jaws and deflections of the nasal septum were extremely rarely found before the age of ten years. His idea was that the whole of those changes were due to what might be called mal-assimilation and liver incompetence. Those soft foods, such as bread and milk, which were spoken of by Dr. Wallace as being improperly given to young children in place of less digestible and less easily swallowed foods, were preparations which contained much albuminous and saccharine material and this required a large amount of oxidation. The result was that in the tissues there was collected an immense amount of material which was gout-producing and half oxidised. Those children were found to suffer not only from catarrh in the nasal passages but from eczema in various parts of the body, diarrhœa, bronchitis, and a multitude of other infantile complaints. His opinion was that the troubles in the nose and post-nasal space were due to toxæmia caused by the half-oxidised products floating in the tissues. This toxæmia set up a vaso-motor paralysis in the nose and the back of the

throat and was followed by catarrh which lessened the nasal respiration and that lessened nasal respiration caused a diminution of oxidation whereby the toxæmia was increased. In that way there was a vicious circle produced. With oral respiration there was increased pressure on the palate and upper jaw and the deformities which followed were a direct consequence.

Dr. B. H. SCANES SPICER said that in conjunction with Dr. Campbell he had examined a large number of skulls in the Museum of the Royal College of Surgeons of England for the purpose of seeing if the vaulted palate could be detected in the older crania of civilised and savage races, but he did not think that there was a single case of vaulted palate to be found there, a fact which showed that the prevalence of that malformation, now so common in England, was a comparatively modern phenomenon. After referring to the position of the respiratory current in the nose, he mentioned Mr. W. Arbuthnot Lane's theory in connexion with the causation of nasal obstruction and adenoids. In this theory the results in question were attributed to respiratory toxæmia from imperfect oxygenation of the blood causing chronic infection of the respiratory mucosa. He believed that Mr. Collier was the first to suggest that negative air pressure in the respiratory tract was a factor in the production of adenoids. Mr. Collier had always dwelt on the extreme variations of pressure in forced breathing as of especial valency in etiology but he (Dr. Scanes Spicer) was inclined to dwell on the minor differences in manometric pressure between ordinary inspiration and ordinary expiration. He believed that comparatively slight but lifelong variations of pressure exercised more influence in producing (through the medium of suction) congestion behind the obstruction and secondary hyperplasia than those violent variations of pressure which only occasionally took place. In a paper read before the Odontological Society some years ago on the nasal factor in the etiology of vaulted palate he attributed the condition mainly to the arrested development of the nose from disuse in respiration and to the fact that the septum was not pushed down or the sinuses expanded, but he now thought that the modern disuse of the jaws was the more powerful factor, although arrested nasal development had some effect.

Dr. G. A. SUTHERLAND said that the food given during the first two years of life among the better classes was far too soft and fluid, but among the poorer classes this was not so, for their children as soon as they were able to chew were given food from the family table. Therefore he did not recognise soft food as a cause of nasal obstruction in the poorer classes, among whom it was nevertheless known to be extremely common. He heartily agreed with Dr. Wallace's view that nasal troubles were the result of chronic indigestion and his (Dr. Sutherland's) opinion was that the chief factor in that indigestion was over-feeding.

Dr. WYATT WINGRAVE said that in connexion with mouth breathing and nasal obstruction there was a great necessity for coöperation between the rhinologist and the dental surgeon. Children might be confirmed mouth breathers suffering from spasmodic dyspnœa and different varieties of cough, but on examination it would be found that they sometimes had no adenoids whatever, that the nostrils and the naso-pharynx were small, and that the choanæ would scarcely admit the end of the little finger and that the palate had the shape of a typical Gothic arch. These cases were extremely unsatisfactory to rhinologists because nothing could be done for them beyond using palliative remedies and it would be a great advantage if the coöperation of the dental surgeon could assist in enlarging the nasal and naso-pharyngeal cavities. He could not agree with Dr. Wallace's view that adenoids were caused by nasal obstruction. Adenoids were embryonic vestiges which might undergo enlargement under certain physical conditions, of which nasal obstruction was probably one, but it was not a primary cause of the condition. With regard to the origin of the Gothic arch palate and crowded denture, it was possible that septal distortion and consequent nasal obstruction might be secondary to the Gothic arch.

Mr. JAMES WIGG said that in the case of the infant food was often allowed to remain in the inside much too long and he supported the idea that toxæmia or gout was a very potent cause of trouble in children.

Mr. E. DENNIS VINRACE said that if that society could suggest to the school boards what was the most efficient diet for the children it would render a very important service to the nation.

Dr. WYLIE spoke in deprecation of the modern system of sending children to school at three or four years of age and said that if school attendance did not commence till some years later there would be less nasal obstruction.

Dr. WALLACE, in reply, said that he had been much interested in Dr. Campbell's suggestion of toxæmia. It seemed to emphasise the idea of the relationship between the congested state of the naso-pharynx when there were corresponding pathological conditions of the alimentary canal. With regard to Mr. Collier's remarks as to the conditions of people in Eastern Asia, the food and the feeding of aboriginal peoples had been a subject of great interest to him for many years, and in the cases in which a trustworthy and accurate account of the food had been got it had shown that the conformation of the jaw and the wearing of the teeth corresponded to the amount of mastication which the food stimulated or demanded. There was once a discussion in THE LANCET on the matter in which it was contended that the kafirs in South Africa lived almost exclusively on soft mealie pap. When investigating the matter he had some of that mealie pap sent from South Africa and he found that it stimulated vigorous mastication, although it was made in the form of porridge. It had the same effect even if it were boiled for an hour or two and the effect was similar to that when one ate nuts. It was difficult to swallow nuts until they were finely comminuted and so it was with mealies. Over and above this he had found in Rätzel's "History of Mankind" that five kafirs could devour an ox in one and a half days, eating sinews, entrails, and everything. He investigated some other cases in which it was said that the rice was softened as we softened it. But in China, for example, it was not cooked soft but each grain was whole and separate and the consequence was that when taken into the mouth it stimulated mastication. Moreover, when once a child had got into the habit of masticating he could not swallow without that mastication. Chinese children were given quantities of sugar cane which could not be swallowed. The child sucked and chewed it but the fibrous part was not swallowed; thus the child learnt to separate the fibrous part which was not swallowed from the juices which were sucked and swallowed. Consequently at an early age the Chinese child learnt to masticate his food.

EDINBURGH OBSTETRICAL SOCIETY.

Anti-cancerous Serum.—Lumbar Puncture in Eclampsia.—Malta Fever in Pregnancy.—Heredity in Ovarian Cystoma.—Etiology of Uterine Fibroids.

A MEETING of this society was held on March 8th, Dr. N. T. BREWIS, the President, being in the chair.

Professor A. R. SIMPSON showed a patient on whom he had used Doyen's Anti-cancerous Serum for Cervical Cancer. The uterus was removed by vaginal hysterectomy. Five injections were given in two weeks before the operation and five after. It had a marked effect in loosening and clearing up the surrounding parts. He also showed a placenta with a cord only three inches long; the cord ended in the membranes about six inches from the placenta and the vessels coursed separately over the membranes to it.

Dr. J. W. BALLANTYNE read notes of a case of Eclampsia in which Lumbar Puncture was performed. The patient was a primipara, aged 25 years, and at about the sixth month of pregnancy. Two days before her admission to the Maternity Hospital she was seized with severe and constant pain in the loins. Next day she had a fit, evidently eclamptic, followed by seven others during the night. On her admission to the hospital next morning she was partly unconscious, her temperature was 101° F., and her pulse was 104 per minute and of high tension; the fœtal heart sounds could not be heard. The urine contained granular and hyaline casts and blood corpuscles; it had 2·6 grains of albumin to the ounce and four grains of urea to the ounce. She was treated with hypodermic injections of normal saline solution under the breasts; half a grain of morphine was given subcutaneously and on occurrence of the fits chloroform was administered. Afterwards bromide and chloral mixture was given, also acetate of potassium. The urine increased to 52, 60, and 65 ounces per day but fits again recurred. On the seventh day after admission the spinal canal was twice tapped but on both occasions only a few drops of clear fluid came away. There was nothing like the

gush of cerebro-spinal fluid which some observers had described. As labour had evidently commenced it was hastened by the use of a Barnes's bag and Bossi's dilator. There were no more fits. Jaundice set in and became more and more marked, in the end being intense, the pulse became weaker and intermittent, and death took place on the tenth day after admission. Blood counts showed that the leucocytes decreased from 28,000 per cubic millimetre on admission to 13,400 on the fifth day and then gradually increased to 41,900 on the day of death; the red corpuscles showed a decrease from 6,020,000 on admission with 80 per cent. of hæmoglobin to 3,730,000 with 54 per cent. of hæmoglobin on the day of death. The necropsy showed that the liver was undergoing a general fatty change, most marked at the periphery of the lobules; and the kidneys exhibited well-marked chronic parenchymatous nephritis. Lumbar puncture was performed in the hope that by drawing off some of the cerebro-spinal fluid the tension which was considered to be the cause of the fits would be relieved and time thus obtained for other forms of treatment to remove the source of the trouble.—Professor SIMPSON, Dr. H. M. CHURCH, Dr. JAMES RITCHIE, Dr. J. HAIG FERGUSON, Dr. J. LAMOND LACKIE, and the PRESIDENT made remarks.

Dr. BALLANTYNE read another paper on a case of Malta Fever in Pregnancy. The patient was 25 years of age and was resident in India when the fever first began. At that time she was four or five weeks pregnant. At the commencement of the fever she suffered from lassitude, constipation, slight enlargement of the spleen, and pyrexia. The temperature rose to about 103·5° F. each evening and fell to normal in the morning. The rise began about noon or 1 P.M. Quinine was administered to the extent of from 25 to 30 grains in the 24 hours but as it caused nausea and vomiting it was next given as intramuscular injections even to the extent of over 40 grains in 24 hours. As this had no discernible influence on the course of the fever the patient's blood was examined and the serum was found to react to the Malta fever test. The quinine was stopped and the patient was advised to take the voyage home to England. Arsenic was tried with but little effect but the temperature became less and afterwards the fever would often be absent for a week or ten days. Along with this improvement the constipation began to yield; at first it required large doses of powerful purgatives to produce even a mild action. Six months after the onset of the fever the blood was again examined and it was found that it no longer reacted to the Malta fever test. The pregnancy was further complicated by the presence of tænia mediocanellata. Labour set in at the normal period and was of an ordinary character; the child was healthy and well nourished. The case was noteworthy from two facts, one of which was the administration of large doses of quinine both by the mouth and intramuscularly without any oxytocic symptoms, and this in a patient free from malaria. The other fact of importance was that the attack of Malta fever lasted for six months and the temperature was above 103° every evening for six weeks and yet the pregnancy not only progressed satisfactorily but was followed by a normal labour and puerperium, and the child was healthy. G. Levi[1] records 11 cases; in six of these abortion occurred and five pregnancies went to full term with one child stillborn. In only two were the children healthy and in these the fever had attacked the mother late in pregnancy.

Professor SIMPSON read a paper on Heredity in Ovarian Cystoma, illustrated by the history of its occurrence in a mother and two daughters. One daughter, aged 25 years, was operated on in November, 1899, and both ovaries were removed for multilocular cysts, the right ovary, which was the larger one, having its pedicle twisted four or five times. Before the operation this patient had borne two children, one being aged two years and the other four months. Another daughter, aged 19 years and unmarried, was operated on in December, 1902, and both ovaries were removed. The right tumour was formed by one large cyst with some smaller cysts and a healthy portion close to the pedicle; as the left ovary was enlarged and cystic it was removed at the same time. The mother, aged 60 years, had had ten children and was 15 years past the climacteric; she was operated on in February, 1905, for a multilocular ovarian cyst of the right side; the left ovary presented the usual appearance of a healthy senile ovary and it was not removed. Dr. Lever, in Guy's Hospital Reports for 1855, gave a list of seven women, all related, who were the subjects of ovarian disease but the relationship was not stated. Sir James Y. Simpson in his Clinical Lectures stated that he knew of three sisters in a family all affected with ovarian tumours. Dr. John Rose, in THE LANCET of Dec. 22nd, 1866, stated that there were two sisters in the Kidderminster Infirmary with ovarian dropsy and that their mother and another sister had the same. Olshausen had mentioned the cases of two pairs of sisters where the disease was unilateral. Veit, von Winckel, and Pozzi also supported the hereditary disposition. Löhlein had related the history of three sisters who had all been operated on for proliferating cystomata of both ovaries. Martin also had observed two similar examples. As it was the germinal layer that was the seat of the disease the degeneration of this layer involved lessened power of reproduction, so that the married women who suffered from ovarian cystoma were barren in the proportion of 1 in 3 instead of 1 in 9 in the general community. The very development of the disease thus lessened the chances of its descent to another generation.—Dr. BALLANTYNE, Dr. F. W. N. HAULTAIN, and the PRESIDENT made remarks on the paper.

Dr. MALCOLM CAMPBELL read a paper on Pathological Conditions of the Ovaries as a Possible Factor in the Etiology of Uterine Fibroids.

[1] Archivio di Ostetricia e Ginecologia, XI., p. 535, 1904.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF MEDICINE.

Hysterical Chorea.—Aneurysm of the Innominate Artery.—Pneumonia in Pregnancy.

A MEETING of this section was held on March 3rd, Sir J. W. MOORE being in the chair.

Dr. JAMES CRAIG exhibited a case of Hysterical Chorea in a girl 22 years of age. There was no neuropathic family history obtainable. She was in good health and was occupied as a laundress until two years ago, when she found herself unable to write on account of a shaking in her right hand. The shaking then extended to her head. At the present time she had a rhythmical rotary tremor of the head, coarse in character, particularly when she was under observation, but at times much finer and frequently not to be noticed at all. There were no contractions seen in the facial muscles. There was a fine tremor occasionally present in the hands but arhythmic contractions, incoördination, and weakness of muscles were not observed. There was an absence of any of the other manifestations of hysteria and there was no evidence of any organic disease of the nervous system. Rhythmic hysterical spasm was the better name for the condition as the term chorea was misleading.

Dr. CRAIG also contributed a short paper on the further history of a case of Aneurysm of the Innominate Artery, reported by him in 1898. The patient had recovered from the aneurysm of the innominate artery, but seven years from its onset he had died suddenly at Wiesbaden from the rupture of an aneurysm of the aorta which was of the size of the head of a newly born child and had ruptured into the œsophagus.—Dr. J. A. MATSON said that the occurrence of perforation into the œsophagus was interesting; out of 68 cases reported by one observer only one had terminated in that way. He had had under his care a case in which perforation into the œsophagus had taken place.—Dr. W. J. THOMPSON said that about six years ago he showed before the pathological section a specimen taken from a middle-aged labouring man. He was very steady and had never complained of pain or any trouble. Death was quite sudden with escape of blood from the mouth. The necropsy showed the presence of an aneurysm, of the size of a walnut, situated in the aorta about two inches above the cardiac end of the stomach. It had perforated into the œsophagus. There was no atheroma or disease of the heart.

Dr. H. C. DRURY read a paper on Pneumonia in Pregnancy, illustrated by three cases which he had met with. These were all in the seventh or eight month of pregnancy. The first had double apical pneumonia, the second double basal pneumonia, and in the third the right lower lobe was alone affected. In all three the pregnancy terminated during the disease, the children were alive up to or after birth, though death occurred soon after. When labour was completed the pneumonic symptoms appeared to be relieved and the three

patients made a rapid and excellent recovery. He pointed out that this complication of pregnancy appeared to be rare. The general idea that it was a very fatal combination was not in these cases borne out.—Dr. T. G. MOORHEAD said that he had had under his care one case of pneumonia in pregnancy. The patient was a primipara, aged 37 years, and was about four and a half or five months pregnant. The whole of the right lung was involved. Convalescence was prolonged and there was cyanosis from an early period and all through the fever. A perfectly healthy child was born at full term.—Dr. NINIAN MCI. FALKINER, Dr. J. M. DAY, and Dr. T. NEILL also took part in the discussion.

LIVERPOOL MEDICAL INSTITUTION.—A pathological meeting of this society was held on March 9th, Dr. J. Barr, the President, being in the chair.—Mr. G. A. Hawkins-Ambler showed two cases of Ovarian Apoplexy; and Dr. J. E. Gemmell Primary Sarcoma of the Ovary.—Dr. Walter C. Oram demonstrated by means of radiographs the great improvement that had taken place in a Tuberculous Elbow-joint after treatment by the x rays.—Microscopical sections of Angio-sarcoma of the Retina were shown by Mr. Richard Williams, Mr. C. G. Lee, and Mr. E. M. Stockdale. Mr. Stockdale considered these tumours to be endothelioma originating from the vessels.—Dr. K. A. Grossmann preferred the old name of glioma.—Dr. R. J. M. Buchanan showed cells from the fluid of Acute Arthritis containing an intracellular micrococcus arranged in pairs and tetrads.—The President and Dr. W. B. Warrington did not consider this organism to be Weichselbaum's diplococcus intracellularis.—Dr. A. Nimmo Walker showed a specimen of Obliteration of the Left Common, Internal, and External Iliac Arteries from a subject in the university dissecting room, in which the chief anastomoses had taken place between the last lumbar and the deep circumflex arteries and between the middle and lateral sacral arteries.—Mr. W. Thelwall Thomas and Dr. E. Cleaton Roberts exhibited sections of multiple Nævo-lipomata removed from the hand of a man aged 20 years; they were congenital in origin. They also showed a Tuberculous Cæcum and Mesenteric Glands removed from a woman aged 32 years.—Dr. G. Stopford Taylor gave a lantern demonstration of the Pathology of Some Skin Diseases, and Mr. F. T. Paul one illustrating the Value of the Microscope as a clinical aid in the diagnosis of new growths. The paper dealt with malignant, tuberculous, and other ulcers in various situations; chronic mastitis and cancer of the breast; malignant disease of the cæcum and appendicitis; periostitis and periosteal sarcoma; growths from the bladder, parotid glands, pleura, &c.—Dr. H. Briggs mentioned the difficulty experienced in deciding whether endometrial formations were malignant or not.——A meeting was held on March 16th, Dr. James Barr, the President being in the chair.—Dr. Frank H. Barendt showed a patient, aged 33 years, suffering from Prurigo Ferox. The primary efflorescences were obscured to some extent by the scratched skin. The femoral, cubital, and axillary glands were enlarged. The man was able to do a little work but owing to the lassitude from want of sleep he was obliged to rest at intervals of from three to four days. He never remembered falling to sleep without having to scratch himself and when the itching was most severe two, or even three, hours elapsed before his scratching ended in sleep.—Dr. Edgar Stevenson related a case of Orbital Exostosis which occurred in a girl 22 years of age. The tumour had produced marked proptosis downwards and outwards in the left eye. It had been noticed by the patient for six months. At the operation for its removal it was found to be attached to the inner angle of the orbit with its base in the frontal sinus. The base was not very broad and the growth was wrenched away without difficulty. It was of an irregular pear-shape and measured one and a half inches in its largest diameter. The patient made an excellent recovery.—Dr. K. A. Grossmann congratulated Dr. Stevenson on being able to retain the function of the eye after the removal of the exostosis. He referred to a case upon which he had operated three years ago.—Mr. G. G. Hamilton described a method of Wiring Fractured Patellæ Transversely and related ten cases upon which he had thus operated. The patients were exhibited and demonstrated by the free movements of the joints the excellent results that had been obtained. In one of the patients both patellæ had been wired. In every instance the men had been able to resume their former occupation, the function of the joints being normal in every respect.—Mr. Rushton Parker said that the results obtained certainly justified the operation. At the same time operation should not be recommended indiscriminately, for it did not seem to be sufficiently recognised that good results could be obtained without any operation.—Dr. T. R. Bradshaw showed a man, aged 54 years, with Symptoms of Syringomyelia which first appeared 15 years ago. The lumbar enlargement was chiefly involved. There were present wasting and atrophy of the anterior tibial muscles with foot and toe drop, trophic changes consisting of painless ulceration and eruptions on the legs and feet and curious deformities of the toes, and loss of painful and thermic sensations below the knee, in the region corresponding to the fourth and fifth lumbar and the first sacral segments. Tactile sensibility was normal. The plantar and patellar reflexes were abolished. There were some loss of thermic sense in the right hand and some stiffness of the fingers of both hands. There were no sphincter or visceral troubles. Dr. Bradshaw pointed out that the complexus of symptoms was characteristic of syringomyelia but the case was atypical in the age of the patient and in the greater involvement of the lumbar than of the cervical region.—The President proposed a motion congratulating Dr. A. T. H. Waters on having attained his jubilee of membership, which was seconded by Dr. W. Carter and carried with acclamation.—Dr. Waters delivered an interesting address on Some Notes and Reminiscences.

FORFARSHIRE MEDICAL ASSOCIATION.—A meeting of this society was held in the School of Medicine, Dundee, on March 9th, Dr. W. Kinnear being in the chair.—Dr. C. Kerr showed a male child, two and a half years old, who suffered from an unusual form of Paralysis with Mental Deficiency. At his birth the labour was easy and normal; apart from an attack of jaundice shortly after birth he appeared healthy and was fairly well nourished. When he was seven or eight months old the mother noticed an inability to hold up his head, which increased as he grew older and was accompanied by a weakness in the back; he was never able to sit up or to walk and appeared to take but little interest in his surroundings. He never had any convulsions. He became very emaciated until January, 1904, since when his condition has remained unchanged. At present he lay unable to move or to turn himself, his body and limbs were wasted, and he suffered from complete motor paralysis, incontinence of urine and constipation, the bowels acting only after enemata. The reflexes were exaggerated, there was some rigidity in the left leg and the right arm, but all the limbs became rigid under the influence of excitement such as the giving of food. The absence of ocular changes showed that the case was not one of infantile cerebral degeneration, as described by Waren Tay, Kingdon, and others. The child was not microcephalic, his head being eighteen and a half inches in circumference. There was no history of syphilis, inherited syphilis, diplegia, or congenital paraplegia.—Dr. G. A. Pirie read a short paper on the Uses of the X Rays, pointing out their value both in diagnosis and treatment.—Dr. H. C. Colman (Broughty-Ferry) read a paper on the use of Nitrite of Amyl in Deep-seated Hæmorrhage. His remarks were based upon an article by Dr. F. Hare of Brisbane, who discovered in treating a case of angina in a young woman that when amyl nitrite was used during a menstrual period it caused immediate cessation of the flow. This observation led him to try its effect in other bleedings and he found it to be of great use especially in hæmoptysis. Dr. Colman described two cases in which he had tried it. The first patient was a woman, aged 56 years, who was still having regular monthly periods and these during the past few years had become excessive. Ergot in large doses had not been successful, curetting caused cessation for three months, while nitrite of amyl on the second day of the period when the discharge was becoming excessive caused complete cessation in twelve hours. This was repeated on three occasions with similar result. The last period had been scanty in amount and had not required treatment. The second case was one of advanced pulmonary tuberculosis in which there was severe hæmoptysis in the summer over a period of six weeks; no treatment had any good effect and morphine did the patient harm, but a return of the hæmorrhage in February was promptly checked by nitrite of amyl with no bad result to the patient. In the first case three minims given by inhalation were sufficient to cause arrest of the bleeding, probably by producing a general vascular dilatation, lowering the blood pressure and allowing the formation of clot to take place in the uterus. The same amount of nitrite of amyl was used in the second case.

—Professor A. M. Stalker read notes on Bright's Disease, in which he stated that chronic septicæmia was the chief cause of the trouble, the most common antecedent of all being tuberculosis in some of its forms. Dental caries, which was widespread and neglected, with all its concomitant disturbance of gastric and intestinal function, must be placed next to tubercle as a cause. Syphilis was a recognised cause and chronic eczema, which in the course of time must pour much septic matter into the blood, could not be overlooked as a cause. No chronic disease presented so fair a field for treatment as Bright's disease did. The patient, however, must give up everything to treatment and it must be carried on for years. This was illustrated by the case of a young woman who for many years suffered from Bright's disease with recurrent attacks of dropsy. After prolonged treatment she recovered, married, became a mother with no untoward symptom in her confinement, and remained well There was no specific remedy but rest, and rest in bed was the most essential of all. A quiet life was essential and in all cases a permanent cure must of necessity be slow

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—A meeting of this society was held on March 18th, Dr. J. F. J. Sykes, the President, being in the chair.—Professor Sheridan Delépine read a paper on the Causes of the Increase of Anthrax in Great Britain. His personal observations went back to the years 1892–93 but were limited to the counties of Cheshire and Lancashire, though he had obtained and collated statistics from the whole of Great Britain referring to the numbers and density of the animal population, the case incidence and fatality of the disease, the proportions of the areas devoted to permanent pasture, tillage, &c., and the feeding of the several kinds of animals. The majority of the cases coming under his notice had been from purely agricultural districts and the human victims were butchers or sometimes farmers who had handled the carcasses. Climate, geographical position, and density of human or bovine population had little influence, the lowest incidence, 2·8 per 100,000 head, being seen in North Wales and the highest, 31·3, in Eastern Scotland, while there was little difference between such diverse districts as Ross and Sussex, Stafford and Sutherland. In Germany outbreaks were usually traceable to cattle, hides, wool, or fodder from Russia, and there was no doubt as to many cases of so-called "industrial" anthrax in this country being caused by the handling of infected wool and hair from Russia, Persia, China, &c., but this could not explain the frequency of outbreaks in the heart of the country or of any of the numerous cases that he had personally investigated. In most the soil of the farmyard or adjoining pasture was infected with the blood of slaughtered animals or their dung and litter were added to the manure heap; very often the disease was not diagnosed, as when a cow in calf was attacked and aborted its death was referred to this accident instead of to the primary disease, or an animal was killed at the commencement of the illness and cut up for hounds' meat, the first intimation of its nature being the appearance of a malignant pustule in the farmer, the knacker, or the butcher. The offal was often given to swine which might develop the disease and it was quite possible that rats and mice might assist in spreading the disease as they did the plague. The diagnosis in the earlier stages was not always easy even to an expert. The failure to recognise or in some cases the deliberate concealment of the disease in animals intended for the food of man was proved by the occasional seizure in the Manchester abattoir of carcasses containing bacilli. Even the bacterial examination if delayed might fail, for though the blood for a short time after death swarmed with the characteristic bacilli they soon underwent degenerative changes and were crowded out by other forms. It was certain that many cases escaped notification through ignorance, real or assumed, and the only way by which this could be prevented was the notification of all cases of deaths from acute illness and of those rendering necessary slaughter on the farm. Farmers and veterinary surgeons should be entitled to a small fee for notification and compensation should be paid for such animals as had been slaughtered by way of prevention or precaution. At the same time, neglect to notify should render them liable to a heavy penalty. Among other amendments in the Diseases of Animals Acts, animals should not save in emergencies be slaughtered or their carcasses disposed of except on licensed and inspected premises and in all cases of animals slaughtered otherwise than by butchers in the ordinary course of their business a veterinary surgeon should inspect the carcass, give a certificate of the cause of death or of the disease, stating the uses to which the carcass might be applied, and should forward a copy of the certificate to the Board of Agriculture as well as to the medical officer of health of the county. The factory and market officials should also be informed. No butcher or knacker should purchase a carcass without having seen the certificate. The best method of disposing of the carcasses had yet to be determined, but at any rate the skin should be kept intact and the spilling of the blood should be avoided with the utmost care.

OPHTHALMOLOGICAL SOCIETY.—A clinical evening of this society was held on March 9th, Mr. John Tweedy, the President, being in the chair.—Mr. Edgar Chatterton showed a woman, aged 38 years, who had the Inner Canthi, Caruncles, and Innermost Extremity of the Lower Palpebral Conjunctivæ Discoloured and of a dark grey appearance. As far as she knew this appearance had always been present. She had never had her lids treated with anything, neither had she any sign of old disease. She was occupied in filling toy crackers with fulminate of silver and she had done this work for years. Mr. Chatterton suggested that the silver salt had got into the eye and had caused the discolouration.—Mr. Charles S. Blair showed a case of Retinitis Proliferans in a woman aged 59 years. The vision of the left eye was suddenly lost six months ago. The right fundus showed changes suggestive of albuminuria with numerous retinal hæmorrhages. The urine was, however, free from both albumin and sugar.—Mr. A. Ogilvy showed a case of Pemphigus of the Conjunctiva in a farm labourer who for failing health went to Canada. Shortly after getting there he suffered from pemphigus, the attack lasting for six weeks. He remained well for six weeks and then returned to England, at which time he could see to read with ease. On the passage home he had another attack which was very severe. The eyes got rapidly worse and now the corneæ were seen to be opaque and the conjunctivæ were so shrunken that but little sac remained and the entropion was most troublesome. Lanolin applied to the eyes gave great relief.—Mr. Lawson and Mr. Parsons exhibited a Drawing of a case of Sarcoma of the Choroid which occurred in a man aged 34 years. He had had a squint for two years and the sight of the right eye had been failing for a year, and when first seen it was almost blind. For three months a black swelling had been present on the sclerotic and this was increasing rapidly in size and had much the appearance of a staphyloma. The eye was blind and the lens was opaque. The eye was removed and on section a large sarcoma was found; this was thin and flat and not at all like the choroidal sarcoma that is commonly seen.—Mr. W. Halliburton McMullen showed a child, aged nine months, in whom an Occasional Upward Deviation of the Eye had been noticed since birth. On examination it was found that there was complete absence of downward rotation of the right eye, the movements in other directions being normal. On looking downwards the left eye was fixed, while the right eye rotated upwards and outwards and was slightly retracted, the eyelid at the same time being elevated and retracted. The inferior rectus and possibly also the superior oblique were defective.—Dr. R. E. Bickerton showed a case with Changes in the Optic Disc, Retina, and Choroid. The patient was a youth aged 15 years. When first seen in July last he had well-marked neuritis in the right eye with surrounding retinitis. The disc, when shown, was raised and of a bluish-white colour with a wool-like margin. There were also numerous changes in the fundus.—Mr. Charles Wray showed a man who had improved considerably while under the treatment for Tobacco Amblyopia which he described at the last meeting of the society. It consisted briefly in making such patients take brisk walks and drink large quantities of water.

GLASGOW PATHOLOGICAL AND CLINICAL SOCIETY.—A meeting of this society was held on March 13th, Professor Robert Muir, the President, being in the chair.—Dr. J. Grant Andrew showed a large Fibro-sarcoma of the Arm for which amputation at the shoulder-joint had been performed.—Dr. J. Walker Downie showed two cases illustrating Persistence of Branchial Clefts. The first patient was a woman aged 25 years. The condition was an incomplete internal fistula opening in the right posterior palatine arch. She noticed it first at the age of 19 years, when it burst and discharged into the mouth a quantity of whitish fluid streaked with blood. It has continued to discharge at

intervals ever since. The second patient was a man aged 26 years. He was known to have had a cord-like structure in the neck since early childhood, but up to two years ago it gave him no trouble. It was now a complete branchial fistula which discharged by an external opening about half an inch above the right sterno-clavicular articulation in the line of the anterior border of the sterno-mastoid muscle. The internal opening was in the right palatine arch.—Dr. J. Kerr Love showed a case of Otomycosis (myringomycosis aspergillina). There had been middle-ear discharge for many years but the present disease was of very recent origin. The case was unusual in that the fungous mass occupied the middle ear instead of, as usual, the inner end of the meatus externus. The fungus was found to be aspergillus niger or nigricans.—Mr. A. E. Maylard exhibited a specimen of Lympho-sarcoma of the Neck and Dr. John Anderson showed microscopic sections of the same. The patient was a man aged 24 years. The disease began as a lump on the left side of the neck six months ago. A mass of the enlarged glands weighing one and a quarter pounds was removed about six weeks ago and already there was a large growth in the same position.—Dr. John H. Teacher showed various specimens and cultures from a case of Anthrax occurring in a man aged 32 years. The entire duration of the disease was only 18 hours. It began with indefinite feelings of malaise, then headache developed followed by delirium, unconsciousness, and, near the end, convulsions. Clinical examination revealed nothing but slight tenderness of the epigastric region. At the necropsy small ulcers were discovered in the stomach and intestines and the bacillus anthracis was found in them and in certain of the mesenteric glands which were enlarged and hæmorrhagic. There was a large almost diffluent "septic spleen." The pia arachnoid was the seat of a diffuse hæmorrhage, universal in its distribution but most marked over the vertex of the cerebrum and on the cerebellum. The micro-organisms swarmed in the extravasated blood and interstices of the pia mater. In the blood within the vessels they were few in number. The nature of the infection was confirmed by cultures and inoculation of animals. The patient was a paint-grinder and the source of the infection could not be determined.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.—A meeting of this society was held at Liverpool on March 17th, Dr. D. Lloyd Roberts being in the chair.—Dr. A. J. Wallace showed a New Instrument described as an "elevating vaginal director," designed to facilitate the making of a vaginal drainage incision from the abdomen. This was an improvement upon the operator's finger as it could be inserted in the vagina by an assistant, who could then push up the posterior fornix to the level of the abdominal incision. Dr. Wallace also gave the clinical features of a case of Inoperable Carcinoma Uteri with Symptoms of Bulbar Paralysis, and Dr. W. B. Warrington described the post-mortem findings and showed sections of the affected portions of the central nervous system. He mentioned that secondary carcinoma in the brain was very rare and that none was found in this case. Thrombosis of the cavernous sinus completely accounted for the paralysis of the third nerve but there were no gross or microscopic lesions to explain the bulbar symptoms. These, he thought, must be attributed to the state of toxæmia produced by the advanced malignant disease.—Dr. Lloyd Roberts showed a Fibromyoma of the Ovary, the parenchyma of the organ being stretched over one portion of the tumour, the other and larger portion of which had a peritoneal covering derived from the broad ligament. Such tumours were rare and were liable to be mistaken for uterine fibroids. The indications for operation were menorrhagia, pain, and the probability that the growth was malignant.—Dr. A. W. W. Lea read a paper on Tuberculous Disease of the Fallopian Tubes and gave an analysis of eight cases treated by removal of the affected organs. He described caseous, fibrous, and purulent types and regarded the condition as more common than was generally supposed. The removal of the tubes usually permitted of a good prognosis; it was not necessary to remove the ovaries unless these were actually diseased, nor was it necessary to remove the uterus as this could be done subsequently should it prove desirable. The paper was illustrated by numerous lantern slides of microscopic sections.—Dr. S. Buckley emphasised the importance of careful pathological diagnosis.—Dr. G. W. Fitzgerald preferred to operate by the vagina and to remove the uterus along with the diseased appendages.—Dr. H. Briggs agreed that the condition was more common than was supposed.—Dr. H. Armstrong, on the strength of 20 years' post-mortem records, confirmed the rarity of ovarian tuberculous disease.

MIDLAND MEDICAL SOCIETY.—A meeting of this society was held at Birmingham on March 15th, Mr. E. W. Wood White, the President, being in the chair.—Dr. J. Douglas Stanley showed a case of Intrathoracic Growth.—Dr. C. E. Purslow showed a specimen from a case of Irreducible Prolapse of the Uterus. The patient, the wife of a labouring man, was admitted to hospital on June 4th, 1904, with a large mass protruding from the vulva which had not gone back for six months. The vagina was completely everted and the uterus lay entirely outside the body; near the centre of the posterior vaginal wall was a small aperture from which a little pus exuded on pressure and into which a fine probe could be passed about one inch. Attempts at reduction under anæsthesia after the patient had rested more than a week in bed entirely failed and so the uterus with a large portion of the posterior vaginal wall was excised. The operation was rendered difficult by the bladder being unusually adherent to the anterior wall of the uterus and by chronic inflammatory thickening of the vaginal wall, the portion of the latter on the specimen showing a thickness of at least one inch. The left ovary was found to be converted into an abscess cavity and to be communicating with, and discharging through, the small hole already mentioned in the posterior vaginal wall. The patient made a good recovery and since the operation had been able with the aid of a ring pessary to get about and to perform her ordinary work. The parts shown were the uterus with the vaginal wall attached and the left ovary.—Mr. A. W. Nuthall showed a specimen of Intussusception.—Dr. J. W. Russell read a paper on Paroxysmal Abdominal Pain associated with Symptoms of Epilepsy.

DEVON AND EXETER MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on March 9th, Mr. W. Horton Date, the Vice-President, being in the chair.—Mr. C. E. Bell read Notes on a case of Removal of an Enlarged Prostate by Operation.—Mr. A. C. Roper read an exhaustive paper on the Clinical Aspect of Cholelithiasis.—In the discussion on the above Dr. H. Davy, Mr. Horton Date, Dr. Harris, Mr. Russell Coombe, Mr. E. J. Domville, and Dr. R. V. Solly took part.—Mr. Bell and Mr. Roper having replied, the proceedings terminated.

Reviews and Notices of Books.

Manual of Gynecology. By D. BERRY HART, M.D. Edin., F.R.C.P. Edin., F.R.S. Edin.; and A. H. FREELAND BARBOUR, M.A., B.Sc., M.D. Edin., F.R.C.P. Edin., F.R.S. Edin. With 12 Lithographs and 359 Coloured illustrations and woodcuts. Sixth edition. London and Edinburgh: W. and A. Johnston, Limited. 1904. Pp. 736.

SOME seven years have elapsed since the appearance of the last edition of this well-known text-book and the time had therefore come when a good deal of revision was required. The authors have carried out this work very carefully and conscientiously and we notice many additions in various chapters. It is a pity that the opportunity was not taken to replace some of the original rather poor illustrations, such as those representing solid tumours of the ovaries, by better and more modern drawings. In the consideration of the diagnosis of tuberculous peritonitis the recommendation made by Kelly is quoted—namely, that the fine lines of the adhesions should be looked for and an attempt made to start peristalsis of the intestines by a smart tap with the finger. The authors apparently do not believe that much good is likely to result from opening the abdomen in cases of malignant peritonitis and they recommend tapping only. In support of this view the statistics of Estor and Puccle are quoted. Of 372 cases collected by them 28 per cent. died as the result of operation and of those who recovered 59 per

cent. had recurrence usually within a year's time, while in only 3·2 per cent. of cases of carcinoma and 12 per cent. of cases of sarcoma was there a prolonged survival. It is interesting to compare the account given of pelvic hæmatocele in this edition and in the last and to notice the very important part now assigned to the various forms of extra-uterine gestation in the causation of this accident. It is difficult to realise that so great a change in our views of the pathology of this subject and in the treatment adopted could have taken place in the last seven years.

Considerable additions have been made to the section dealing with the operative treatment of diseased tubes. The authors are in favour of the abdominal route rather than the vaginal one in operating on these cases. The classification adopted by Pfannenstiel in his article on ovarian tumours in Veit's handbook is that given—viz., (1) tumours arising from the stroma of the ovary; (2) those arising from the parenchyma; and (3) combination tumours. Wilms's theory as to the origin of dermoid tumours is quoted as the most probable and, as the authors point out, unless we accept such a theory it is impossible to explain how entodermic structures are met with in these tumours, although it is so difficult to understand what stimulus should make a primordial ovum undergo such a change, analogous as it is to the condition known as parthogenesis. A new section is devoted to the very interesting group of tumours known as adenomyomata of the uterus. The great progress made of late years in the technique of the various operations performed for the removal of the uterus the seat of fibroid tumours has enabled the authors to compress considerably their description and consideration of the different methods employed. The account of the operation of supravaginal amputation with extraperitoneal treatment of the stump has been eliminated and the fact that such an operation was still described in the last edition shows only too clearly the necessity for the appearance of a new edition of this work. The question as to whether the whole uterus should be removed or whether the cervix should be left behind is not discussed, as the view is taken that every case of fibroid tumour must be treated on its own merits and that no general rules of treatment can be laid down for all the different conditions which may occur.

It is a pity that in the revision of this edition the authors did not correct the statement on p. 522 that deciduoma malignum is an ordinary sarcoma modified by pregnancy is the opinion still held as to this condition by some of the members of the Obstetrical Society of London. The discussion on the admirable paper read by Teacher before that society on June 4th, 1903, showed that this is far from being the view held by the majority of the members at the present time. The book still maintains its original characters and is one of the best of the English text-books on gynæcology. The only criticism that it is necessary to add is that the accounts of the symptoms of the various diseases tend to be rather sketchy and are not given sufficient importance.

An Outline of the Theory of Organic Evolution. By MAYNARD M. METCALFE, Professor of Biology in the Women's College of Baltimore. New York: The Macmillan Co. 1904. Pp. 204. Price $2.50.

IN a comparatively small book of some 200 pages Professor Maynard M. Metcalfe of the Women's College in Baltimore has contrived to condense the story of organic evolution. This achievement may unhesitatingly be described as a very successful one, the result being due to the following causes; in the first place the author has a very pleasant and easy style of writing; in the second he has provided for the illustration of his subject an unusually liberal allowance of coloured and uncoloured plates; and in the third place he has carefully steered his way through that vast mass of detailed evidence on which depends the proof of the theory of organic evolution. The task which Professor Metcalfe has performed with such conspicuous success is no doubt a very much easier matter to-day than it would have been a few years ago, when few others than trained men of science accepted the doctrine of organic evolution as based on any more substantial foundation than questionable hypothesis. The main premisses of organic evolution are to-day accepted by a large section of the public, so that in preparing a popular treatise on the subject the author can address himself to a sympathetic audience. Technicalities of all kinds have been avoided and any intelligent reader will be able to follow the general line of argument without undue effort. In a large number of instances the pictures speak for themselves and tell their own tale without further explanation in the text.

The theory of organic evolution is explained in Part I. and is considered from the point of view of natural selection, sexual selection, segregation, and the inheritance of parental modifications. These various factors in the progressive evolution of the organic world are freely illustrated by examples derived from both animal and vegetable kingdoms. The manner in which the offspring tends to resemble the parents, the reasons for variation from the parental type, and the destruction in the struggle for existence of those individuals who are not adapted to their environment are clearly explained in the opening chapters. Under the heading of "Sexual Selection" the author shows how the exercise of choice in mating is a primary stimulus for the development of courting habits and the perpetuation of those conspicuous colours, ornamental appendages, and other attractions which are not only pleasing to the opposite sex but which also add to the general sum of human happiness.

In Part II. the observed facts in variation both in the animal and vegetable kingdoms are explained and interpreted by the several operative factors in evolution. A very considerable proportion of this part of the work is devoted to the explanation of the manner in which colour variation is of value as a means of protection. The manner in which mimetic colouration is utilised as a means of aggression is also graphically demonstrated by a series of very beautiful coloured plates. To many readers the short chapter which is reserved for Man in Relation to Evolution is likely to prove one of the most interesting chapters in the book; it represents a short and popular account of some of the most interesting portions of Huxley's and Romanes's larger works; in fact, it bears the same sort of relationship to these classical works that Lamb's "Tales from Shakespeare" bear to the original plays of the great dramatist.

In every way this little volume is to be regarded as a most fascinating account of the natural history of evolution and the only sense of regret that is likely to be felt by more advanced students than those to whom the book is obviously addressed is that it does not take into its purview the evolutionary changes which run a parallel course in the so-called inorganic world.

LIBRARY TABLE.

The Influence of Growth on Congenital and Acquired Deformities. By ADONIRAM BROWN JUDSON, M.D., Orthopædic Surgeon to the Out-patient Department, New York Hospital. Profusely illustrated. New York: William Wood and Co. 1905. Pp. 276.—In this volume certain features are presented in a new light which gives them importance as matters that will repay close attention in practice. Among the subjects thus treated are: the application of the weight of the body for the reduction of club-foot, the use of the equine position of the foot to increase the length

of a shortened limb, the adoption of symmetrical movements and correct rhythm for removing deformity and excluding lameness, and the manner in which misleading "tumours" are produced by the rotation of lateral curvature. The author emphasises what seems to lie at the base of orthopædic practice, the fact that prevention and cure are to be found in so managing a case and equipping a patient that natural growth will be the principal factor in recovery. The methods of diagnosis, prevention, and treatment advocated are recorded as having proved useful "and as likely to be at least suggestive in the practice of others." The book is very practical and the questions discussed are made clear; to this end the copious illustrations are exceedingly helpful. The index is very full. The book deserves to become popular as a manual.

A Magisterial Handbook. By W. H. FOYSTER, Solicitor and Notary Clerk to the Justices of Salford. London: Effingham Wilson. 1905. Pp. 75. Price 2*s.* net.—The title page of this little book bears a sub-heading which describes it as "a concise outline of the everyday functions of magistrates with tables of offences and matters cognisable by them" and the description is not inapplicable to it. Whether, however, any useful purpose can be served by the tracing of an outline so extremely concise, or to use an epithet more appropriate to the metaphor so "sketchy," is doubtful. There are a sufficient number of text-books which summarise the duties of magistrates and if they are of a somewhat bulky nature no justice of the peace need carry one of them in his pocket. He uses them when in court, where he has a table or bookshelves upon which they may repose when not in actual use. Mr. Foyster's handbook, in seventy-five by no means closely printed pages of large type, gives information which might convey to a foreigner some knowledge of our criminal law with regard to petty offences or it might serve as an analysis to be read over by a student in the hours immediately preceding his examination. Beyond supplying with some precision the maximum penalty for offences over which magistrates have jurisdiction it conveys but little with which the average citizen is not sufficiently familiar for everyday purposes. Even a "concise outline" should contain more than this if it is to be of any practical utility to laymen; for lawyers such a work can hardly be intended.

Urban Police and Sanitary Legislation, 1904. Being a Collection of Provisions contained in the Local Improvement Acts obtained by English Urban District Councils in the Year 1904, after Consideration by the Police and Sanitary Committee of the House of Commons. Compiled and arranged by FRANK NOEL KEEN of the Middle Temple, Barrister-at-Law. London: P. S. King and Son. 1905. Pp. lxxxv.-240. Price 10*s.* 6*d.* net.—In the session of 1904 the Police and Sanitary Committee of the House of Commons had before it 22 Bills, 11 of which, promoted by municipal corporations and by urban district councils, became local Acts conferring upon them enlarged powers for the government of their boroughs and districts. Mr. Keen has collected, collated, and classified under appropriate headings the provisions of the 11 local Acts of Parliament referred to so far as they relate to the regulation of the matters usually defined as "police and sanitary," excluding the other topics dealt with in local Acts of this character, such as street works, lighting and water undertakings, finance, and the acquisition of lands. The Acts selected do not include those promoted by municipal corporations or by the London County Council. The work of the compiler is intended to be a guide to Parliamentary draftsmen and others concerned with the preparation of Bills of the class indicated and to enable these to compare and to select sections and phrases from measures which have been approved and are therefore suitable for adoption as standards for future local legislation. No trouble has been spared in arranging the precedents in such a manner that a model section already embodied in a recent Act may be considered almost at a glance, together with the material or verbal differences distinguishing from it corresponding sections in similar Acts. The ample tables and index contained in the volume should meet the needs of all interested in the professional study of the subject dealt with and should save for all concerned much time, trouble, and research in discovering, as well as in consulting, the necessary authorities.

JOURNALS AND MAGAZINES.

Dublin Journal of Medical Science.—The March number opens with a paper by Dr. E. J. McWeeney on a case of chronic lymphæmia which was interesting in that the bone marrow showed no tendency to lymphoid transformation, as well as owing to the fact that an intercurrent attack of pneumonia produced no polynuclear leucocytosis or diminution in the number of lymphocytes present. Mr. R. E Matheson, Registrar-General for Ireland, continues his analysis of the returns of the recent census as applied to Ireland, pointing out among other things a marked decrease in the percentage of illiteracy but also showing that Ireland heads the list in its proportion of deaf-mutes and of insane persons, Scotland coming next, and England last in each category. Dr. Samuel Synge contributes some notes upon Chinese medicines and Dr. J. Francis Dixon discusses a case of chorea insaniens associated with pregnancy.

New Inventions.

FORCEPS FOR NOSE AND THROAT WORK AND FOR OPENING PERITONSILLAR ABSCESS.

THESE forceps are a slight modification of Lord Lister's sinus forceps. Being intended chiefly for nose and throat work they have been made with a crank handle, so that the field of operation is not concealed by the surgeon's hand. It will be found that greater precision and firmness in manipulation are thus secured by being able to manœuvre in a direct line. The extremity is sufficiently blunt not to injure healthy surfaces, but is fine enough to allow of its being pushed through œdematous, necrotic, or membranous tissues. The inner surfaces are roughened so as to permit of grasping foreign bodies in the nose, calculi in the tonsil crypts, &c. I have found these forceps useful for a variety of purposes,—as ordinary nasal dressing forceps, for introducing gauze packing into the accessory sinuses during or after operation, for exploring the sphenoidal sinus, for swabbing

the pharynx or treating the tonsils, for seizing the end of the hypertrophied uvula, and so forth. They are also serviceable for packing the wound after the mastoid operation. They will be found particularly useful for opening peritonsillar abscesses. When the abscess is pointing—generally above and external to the tonsil—pressure with the extremity of the forceps will readily detect the site of suppuration and with slight increase in force the point can easily be made to penetrate the abscess. In withdrawing them the two blades should be separated so as to enlarge the opening, as in Hilton's method. These forceps have been in use for several years and are made by Messrs. Allen and Hanbury, Messrs. Mayer and Meltzer, and other manufacturers.

Queen Anne-street, W. STCLAIR THOMSON, M.D. Lond.

THE LANCET.

LONDON: SATURDAY, MARCH 25, 1905.

Señor Manuel Garcia.

ALTHOUGH it has been said by some physiologists, we hardly know with what degree of accuracy, that 100 years would be the proper age of man in these latitudes, the actual attainment of that age is still sufficiently uncommon to excite wondering remark. Its attainment by a philosopher whose work has been eminently beneficial to his race is necessarily still more remarkable, even if only by reason of the small numerical ratio borne by such men to their fellow creatures, and it need, therefore, be no matter for surprise that all civilised countries were united on Friday, March 17th, in doing honour to Señor MANUEL GARCIA on the occasion of the 100th anniversary of his birthday. Not only Spain, the land of his birth, and England, the land of his adoption, and Germany, which has contributed so much to the advancement of laryngology, but even Russia and Japan were represented on the occasion and turned for the moment from the realities of war to offer their tributes of laurel to the man who had achieved one of the great victories of peace. The KING, with the graceful and kindly tact which renders him an unfailing exponent of the best feelings of his subjects, initiated the proceedings of the day by conferring the Commandership of the Royal Victorian Order upon the venerable father of laryngoscopy; and this was followed by his investiture by the Spanish Chargé d'Affaires with the Royal Order of ALPHONSE XII. From the German EMPEROR he received at the same time distinction even more marked than any which Royal orders can confer, in the shape of the "great gold medal for science," hitherto bestowed only upon Professor VIRCHOW, Professor KOCH, Professor EHRLICH, and Professor MOMMSEN, while the offerings and addresses presented to him by the scientific bodies and societies of the world were almost uncountable. The last of them, a portrait painted by Mr. SARGENT, R.A., and subscribed for by international contributions from the many personal friends of Señor GARCIA, was a gift which brought the proceedings of the morning meeting held in his honour to a fitting close.

The scene of the ceremonial being in England it is hardly needful to say that a dinner was necessary to its entire completion and this dinner afforded to Sir FELIX SEMON, who proposed the principal toast, an opportunity of sketching the career of the guest of the evening and of describing the successive steps by which he was led to the discovery that the larynx might be rendered visible by a combination of mirrors and that the actions of its several parts in phonation might thus be studied. When Señor GARCIA was occupied, said Sir FELIX SEMON, with the solution of the great problem of the production of sound in the human larynx his scientific mind was forced to the conclusion that facts ought to be substituted for the hypotheses which were in vogue in the middle of the last century and that facts could only be ascertained by inspection of the healthy living larynx when engaged in the act of singing. He was unaware that the problem had occupied the attention of medical minds for nearly a century and that although none of his predecessors had found the solution, some of them, notably AVERY, and BABINGTON, who succeeded in obtaining a glimpse of the glottis in 1829, had not been far from doing so. It was only after many years of thinking upon the subject that one day in 1854, when strolling in the Palais Royal, GARCIA saw in his mind's eye the position of the mirrors which would render the larynx visible; and, as he has himself described in a charming fragment of autobiography, he rushed into the shop of CHARRIÈRE, the well-known instrument maker, and bought for six francs a dental mirror which had been one of the failures of the London Exhibition of 1851. Having procured a hand-glass he hurried home, warmed the little mirror, placed it in his own throat below the uvula, threw the rays of the sun upon it by means of the hand-glass, and on his first attempt had the immense satisfaction of seeing his own glottis wide open. The results of his observations were presented to the Royal Society in a paper entitled, "Physiological Observations on the Human Voice," which was published on March 22nd, 1855, the birthday of a discovery which was destined to revolutionise our knowledge of the larynx in health and disease. How far the former knowledge has been of practical utility in Señor GARCIA'S own profession, how far, that is, it has conferred upon teachers of singing and elocution increased powers of training the vocal organs of their pupils or of preserving them from erroneous methods of phonation, it is somewhat beyond our special province to inquire, but at least we have not been made acquainted with any discoveries in this direction which are at all comparable with those bearing upon the investigation and treatment of disease. It cannot be doubted, of course, that a teacher of philosophical mind would render his experience in the highest degree fruitful, and no one can question that Señor GARCIA'S many illustrious pupils, among whom JENNY LIND, MATHILDE MARCHESI, JOHANNA WAGNER, ANTOINETTE STERLING, the Misses MACINTYRE, ORRIDGE, LARCOM, and THUDICHUM, JULIUS STOCKHAUSEN, BATAILLE, and CHARLES SANTLEY were mentioned by Sir FELIX SEMON at the dinner, would be of one mind in the conviction that the benefits which they had derived from his instruction would be incomparably greater than any which would have been likely to accrue to them from teaching based upon tradition or "experience" alone. Such benefits, great as they presumably were, and eminently conducive to the enjoyment of countless audiences, must still be looked upon as subordinate to the application of the invention along lines which the inventor himself was not qualified to pursue, the lines of medical and surgical discovery and manipulation.

From this aspect of the question we think it is somewhat to be regretted that no endeavour seems to have been made to associate the great name of CZERMAK with the honours of the day. GARCIA is not more incontestably the father of laryngology as a whole than CZERMAK is

the father of its applications to the study and the treatment of disease, applications which, it will be remembered, were made early and extensively in this country. The instrument itself was improved by CZERMAK who brought it to London during the course of the great exhibition of 1862 and gave many demonstrations to the profession. He revealed for inspection and treatment many previously unsuspected forms of throat disease and not only enabled surgeons to see and to remove growths springing from the vocal cords but also disclosed certain forms of paralysis to which the cords are exposed, sometimes from disease of the brain, sometimes from pressure upon their nerves by aneurysms and other swellings within the chest. All branches of the medical profession may unite cordially with musicians in doing honour to the philosopher to whom both callings owe so much; but our debt, or rather the debt of the public through us, is by far the more considerable of the two and our recognition of the master must not render us forgetful of the great disciple by whom the applications of the laryngoscope were first extended along paths which could not have been followed by the inventor.

Plastic Surgery.

AS the learned Mr. ISAAC BICKERSTAFF has observed, "the nose is a very becoming part of the face"; and its value in this respect is never fully appreciated until it is lost. Such a deprivation, however it may have been brought about, entails on the sufferer extreme misery. The absence of a nose is so utterly obvious that it must be seen by everyone and the effect on the patient may be much greater than might have been anticipated. "The patient consequently shuns society and every appearance in public and often is oppressed with a self-loathing and abasement almost amounting to the blackest despair." A nose may be lost by accident or through gangrene from cold and MAISONNEUVE has described a case in which the organ was congenitally absent but undoubtedly the absence of a nose is in many cases to be attributed to a less reputable cause and it is not improbable that this popular ascription of the origin of the lesion is, in part at least, the explanation of the very great mental effect of the loss of a nose. It must, however, be recognised that syphilis is not responsible for a large number of the cases; in many lupus is the cause. In some parts of the world, especially Italy and India, it has been customary to employ removal of the nose as a form of punishment, sometimes judicial, but chiefly as a mode of carrying out private revenges. Especially in some districts of India is it considered a suitable form of punishment for a husband to inflict on a wife of whose conduct he does not approve. Among the Romans this penalty was not at all rarely inflicted, both by the law and by private animosity. Inasmuch as the evil was especially prevalent in certain countries it would not be unreasonable to expect that methods of treatment should first arise there and so it proved; for countries which were pre-eminent in possessing numbers of suitable subjects for operation were the first in which operations were devised and practised for the relief of the deformity.

The earliest notice which we can discover of any attempt to repair this important lesion is to be found in CELSUS. In the seventh book of his work, "De Re Medica," he mentions the practice of repairing noses by sliding flaps from the cheek and the description is sufficiently full and accurate to enable the operation to be performed. Except for a few slight references we find nothing definite after CELSUS until 1442 when MANZANO seems to have employed a method for restoring a lost nose. BENEDICTUS in 1539, in his very elaborate work "Omnium a Vertice ad Calcem Morborum Ligna, Causae," the title of which shows its all-comprehensiveness, describes fully the method of restoring the nose by means of a flap taken from the arm but he does not approve of the operation. In 1548 GILBERT COUSIN published a work called "Narrationum Sylva" and in this he speaks of a certain BRANCA DE CATANI who re-made noses, ears, and lips. In 1573 ANDREAS A CRUCE wrote a book called "Chirurgia Magna" and in it he speaks with disapproval of the operation. GASPARO TAGLIACOZZI, better known by his Latinised name TALIACOTIUS or, as it is often written, TAGLIACOTIUS, published in Venice in 1597 a large folio volume entitled "De Curtorum Chirurgia per Insitionem," and a second edition appeared at Frankfort in 1598 under a much more elaborate title. TALIACOTIUS devotes no small amount of space to a dissertation on the importance of the nose and he quotes in support of his contention the opinions of many writers. He describes most minutely the method, always called by his name, of fashioning a new nose or other defective part from a flap of skin raised from the arm of the patient. A bridge of skin was first dissected up of the required width and length and under this was passed a piece of lint, and when granulations had fully formed the upper end of the bridge was separated and the flap of skin was inserted in the required position, the arm being retained by an apparatus in such an attitude as to prevent any traction on the new flap. After some days the attachment of the flap to the arm was divided and the arm was released. Many illustrations are given showing the mode of performing the operation and the instruments used and in addition the figures of several persons on whom the operation had been performed; if we may judge by these illustrations the results were extremely successful. The Taliacotian operation, as it was called, became very widely known and was much employed. From our knowledge of the descriptions given by one or two previous authors it is certain that an operation identical in all essentials had been devised some years previously and it seems that BRANCA DE CATANI performed the operation many times, even if he did not invent it. Nevertheless, the credit of the method is generally attributed to TALIACOTIUS and his name is given to it.

It is not improbable that the wide extension of syphilis in Europe in the sixteenth century, with the consequent great increase in the number of the noseless, contributed to the popularity of an operation designed to efface the ravages of a discreditable disease. So striking a proceeding as the replacement of a lost nose was very naturally seized on by poets and wits and from that time onward, even to the present day, we find references to it. The lines in "Hudibras" are well known but in these we find a fallacy which had a very wide circulation. At first the skin for the

new nose was always taken from the patient's own arm and this is the true Taliacotian operation, but it was soon suggested as an improvement that the reparative flap should be supplied by some other person. This method was never much employed as it was necessary to fasten together for some ten days the patient and the supplier of the skin. It was in this form that the Taliacotian operation made its appearance in popular literature. Soon certain theories arose as to the source and the fate of the transferred skin. It was said that the gluteal region furnished the most suitable skin for the purpose, on account of its toughness, but this is probably a poetical addition to the operation. Further, it was held that when the grantor (if we may employ legal phraseology) underwent any vicissitudes, however long it might be after the operation, similar changes would occur in the nose of the grantee. Should the grantor fall ill the nose would suffer too; a fever in the original possessor of the piece of skin would give rise to a localised inflammation in the transplanted organ; and if perchance the giver of the skin should die, the nose would not fail to recognise its true allegiance and would die also and we are even told that it was considered to be the correct thing to send the nose to be buried with its original owner. As SAMUEL BUTLER says in "Hudibras":

> "But when the date of nock was out,
> Off dropt the sympathetic snout."

We have no evidence to show that this idea was founded on fact. One of the most recent tales founded on the Taliacotian operation is ABOUT'S "Le Nez d'un Notaire."

The method was not received with universal approval, for GABRIEL FALLOPIUS, who wrote in 1606, said that he would prefer to remain all his life without a nose rather than to submit to such an operation, but he was thinking probably of the pain and the discomfort. In 1611 THOMAS FIENUS spoke highly of TALIACOTIUS's work and the method has been employed to some extent up to recent times. It has, however, been displaced greatly by a return to the operation described by CELSUS and by the introduction of the "Indian" method. We have mentioned above that in India there exist many opportunities for an operation for the restoration of a lost nose and therefore it is not surprising that in that country a method had been devised for this purpose. Nothing was known in Europe of any Indian method until in 1792 during the war with TIPPOO SAHIB several persons who had been taken prisoners by him were deprived of their noses. When liberated some of these had the nose restored by a Mahratta surgeon. It was then found that an operation for the restoration of a lost nose had been performed in India apparently for hundreds of years. The operation was introduced into this country by J. C. CARPUE who in 1816 published "An Account of Two Successful Operations for Restoring a Lost Nose." In this method the flap is taken from the forehead and this is the procedure usually adopted at the present time in this country.

The ultimate results of the operation are not always as brilliant as they first appear; a nose that soon after the operation is prominent and perhaps possesses a Roman curve may in a few months settle down and become comparatively inconspicuous, but, as LISTON said, "the worst made nose is infinitely superior to the horrid cavern which previously struck the passers-by with pity and disgust." The appearance of the nose is of the chief importance but with reference to the functional value of the new nose the same author described the result in a certain case: "One of my patients I have seen enjoying a pinch of snuff in which he largely indulged, apparently with as much gusto as the oldest and most experienced nose could possibly have imparted." In many cases, especially when the mutilation has followed syphilitic and tuberculous disease, very fair results can be obtained by means of an artificial nose attached to a pair of spectacles, for it is difficult in such cases to be sure that the disease will not return. We have entered somewhat fully into the history of rhinoplasty, for it was the first of the plastic operations to attain to any extensive employment, but within recent years plastic surgery has grown to large proportions and is now widely employed in many parts of the body. In THE LANCET of March 4th we published an article by Mr. C. R. B. KEETLEY in which he describes many recent advances in this department of surgery. We have now at our disposal several methods of transplanting skin. We can slide or turn a flap of skin from one part to an adjoining part of the body, as in the Celsus method of rhinoplasty or in the Indian operation, or we can, as in the Taliacotian operation bring it from a limb. We can, moreover, now, with suitable precautions, transfer bodily a piece of skin, including its whole thickness, from one part to another with due aseptic precautions and in this method another person may conveniently supply the material. Skin grafting, too, has increased in usefulness and in addition to the older method of REVERDIN, devised in 1869, we have that introduced by THIERSCH. Thus the surgeon is provided with many means of covering raw surfaces which were unknown to his predecessors, so that he is enabled to carry out many procedures hitherto impossible. In plastic surgery in its widest sense lie some of the greatest future advances of our art and it is not possible at the present day to do more than to speculate as to what may be in store for us in this direction.

Plague in India.

THE serious news which our Indian correspondent sends regarding the mortality from plague in that country indicates that no progress has been made in the control of the disease. On the contrary, the situation in India is becoming worse year by year and not only threatens to be, but is already, one of the greatest catastrophes of modern times. In January of this year over 100,000 deaths were recorded from plague in India. In February there were another 100,000, and 34,000 and 35,000 deaths are the numbers which have been reported during the past two weeks. Thus a greater disaster has occurred to our Indian population since the commencement of 1905 than has happened to the Russian army in Manchuria. Have those responsible for the welfare of our Indian empire fully realised the gravity of the situation either from its humane or political aspects? As regards the humane side, it is obvious that active measures proportionate to the greatness of the issues at stake require to be taken. Are these being organised and carried out? We doubt if the reply that can be given is satisfactory. It is true that an inquiry is to be undertaken by the Lister Institute of Preventive

Medicine, the governing body of which has been in communication with the India Office and that the Institute, in conjunction with the Royal Society, has nominated a small advisory committee to be intrusted with the duty of drawing up a plan of campaign. This is good so far as it goes but surely the urgency of the situation has not been recognised. The proposal of the Lister Institute was made last September, the work has not yet commenced, and it is possible that nothing much will be done till next September. In the meantime the appalling death-rate continues. The advisory committee includes Dr. C. J. MARTIN, F.R.S., director of the Lister Institute, and Colonel D. BRUCE, R.A.M.C., F.R.S., and is to be reinforced by a nominee of the India Office, two workers in India, and two assistant bacteriologists, and there is certainly room upon such a committee for one or two more persons possessing first-hand knowledge of the practical problems involved in the checking of an epidemic. Dr. MARTIN, Colonel BRUCE, and Captain G. LAMB, I.M.S., who will coöperate with the committee in India, are obviously competent to do their share in grappling with the situation, and so is the gentleman whose name has been mentioned as the representative of the India Office, but if the scientific inquiry on the spot is to be delegated, as was once we think the design of the Lister Institute, to two assistant bacteriologists, then the confidence of the medical profession in the work of the Advisory Committee will require some support. The method in which this matter is being handled must occasion concern to those who are anxious that the inquiry should be started in a proper manner and should achieve practical results. The epidemic of plague in India is more than a passing incident calling for some palliative measure. It is a catastrophe which if not dealt with by broad and adequate measures having for their main object the prevention of the disease will create a state of affairs in the Empire which may become a serious political danger. No Government can afford to have its subjects dying from one disease, presumably a preventable disease, at the rate which is occurring in India, for ultimately such destruction produces its moral effects. When the rulers appear to hold the subjects' lives cheaply a loosening of the bonds may occur between the governed and those who govern. This has occurred in the times of pestilence before now and it may occur again.

Annotations.

"Ne quid nimis."

HOUSEKEEPING IN HOSPITALS.

THE correspondence published in the *Times* of March 18th by Mr. Danvers Power, the chairman of the National Hospital for the Paralysed and Epileptic, explaining the steps taken by his committee in order to reduce its expenditure in response to a communication from the Metropolitan Hospital Sunday Fund, is of considerable interest. The chairman of the Metropolitan Hospital Sunday Fund had intimated that the grant from the Fund to the hospital would be reduced in consequence of the average cost of the treatment of in-patients being considered by the committee of distribution to be too high. In order to effect a reduction the committee of the hospital requested its matron, with the assistance of certain ladies thoroughly well qualified for the task, to inquire closely into every detail of expenditure and of consumption, and into the domestic arrangements of the hospital generally. By their advice considerable alterations were made in the food contracts and in the system under which supplies were obtained from without, and within the hospital equally important improvements were introduced into the cooking and the distribution of victuals. Economy was also effected in such directions as the purchase of cheaper, but equally serviceable, crockery, and in lighting, and a female housekeeper was employed instead of a steward. In the cost of the surgery and dispensary, by the coöperation of the medical staff, over £200 were saved in a single year, the combined result of the efforts described amounting to an annual saving of £2000. In a reply to the letter in which Mr. Danvers Power informed the chairman of the Metropolitan Hospital Sunday Fund of these gratifying results, Sir Edmund Hay Currie estimated that a corresponding effort made by the other 37 hospitals, the expenditure of which had been criticised simultaneously with that of the Hospital for the Paralysed and Epileptic, should have resulted in the saving of at least £30,000 per annum, or, as he expressed it, the interest upon a million of money. There can be no question that the publication from time to time of the efforts successfully made by a hospital to deal with questions of domestic management must act as an incentive to similar activity in other institutions, for it is likely to encourage suggestion and mutual benefit by the communication of the results of experience. The National Hospital is particularly to be congratulated when we take into consideration the period of difficulty through which it has passed, for we are able to say that no patient in it has suffered by, or has even been conscious of, any diminution in his comfort owing to the care taken to prevent unnecessary expenditure, though some loss may have fallen upon persons in whose emoluments the benefactors of hospitals take no interest. Published in the same column of the *Times* was a letter from Mr. J. Martin White, with an interesting table of the relative expenditure of a number of London hospitals, of the Royal Infirmary, Edinburgh, and of several provincial hospitals in England and in Scotland. Mr. White called attention principally to the relatively high expenditure in London as compared with that in corresponding institutions elsewhere, particularly in Scotland, but at the same time he showed the discrepancy which exists in the cost of maintenance per bed in London. The differences between the expenditure of similar metropolitan institutions may well excite the attention of the subscribing public and should form a subject for the serious consideration of the committees of some of the hospitals named. The comparison with hospitals outside the metropolis is another matter. The cost of living generally is so much higher in London than in smaller cities and towns that it is not easy to make such a comparison fairly. Within a hospital the food-supply principally consists of precisely those articles of consumption which in London have to be paid for at rates quite out of proportion with those prevailing elsewhere if a high standard of quality is to be maintained. At the same time, distance from the source of supply, combined with the large quantities required, strengthens the position of the middleman. The whole matter, however, is one of considerable interest and of increasing importance.

ARE COLLIERY WARNINGS OBSERVED?

THE following interesting communication referring to an annotation under the above heading in THE LANCET last week has been sent to us by the Press Association :—"With reference to the note in THE LANCET inquiring whether colliery warnings are officially published, the Press Association deems it necessary to say, as has been frequently stated

before, that they are not 'issued by the Meteorological Office authorities,' who, in conjunction with the Home Office, seem to have declined to undertake the responsibility, although the director of the establishment had studied the meteorology of explosions with Mr. W. Galloway. During the past 24 years, 1881-1904, the warnings have been supplied, as occasion demanded, by the Press Association and the service is still maintained. Down to 1880 explosions had been marked by loss of life on a wholesale scale, in spite of the legislative enactments introduced since the middle of last century and designed to put an end to the calamitous events which so frequently shocked the country. With the introduction of the warnings in 1881, when there were no new mining laws, great disasters diminished in frequency and for many years past there has not been a single catastrophe which can be compared with any of the numerous serious calamities of a generation ago when we so often had to lament the loss of from 100 to 350 men in individual explosions. It is now quite an exceptionally rare event to read of a British colliery explosion involving the loss of as many as ten lives, while both continental and American mines continue to supply instances of disasters of the first magnitude. During the quarter of a century of the Press Association's issue of warnings there have been great improvements in the mining laws, in inspections, and in methods of working, and superior, scientifically educated managers—specially trained mining engineers—have replaced the old school of rule-of-thumb managers who were accepted as good enough for the duties in the past. Still, it is maintained that the warnings have from the first played a not unimportant part in the extremely satisfactory progress that has been made in the saving of human life. In the early days there were some managers who resented being told what atmospheric changes were in prospect, regarding the warnings as a reflection upon their own ability to read the future, but that feeling has now disappeared. From the first the warnings were welcomed by the colliers, whose delegates at the various miners' conferences directed attention to the usefulness of the occasional paragraphs. For instance, the Midland Counties Federation of Miners unanimously passed a resolution 'recognising the value of the meteorological warnings which have appeared from time to time in the press as a means of preventing colliery accidents and therefore great loss of life.'"

ARSENIC IN DRESS FABRICS.

WE have frequently referred in these columns to the possibility of contamination of dress fabrics with arsenic owing to the use of that poison in the preparation of many dyes. We hold that it is just as important that our clothing, and especially that which is worn next the skin, should be free from arsenical compounds as our food. Arsenic is readily absorbed by the skin and symptoms of arsenical poisoning may easily arise from the presence of the metal in a garment. Perspiration, too, has the property of dissolving many metallic substances which would be otherwise untouched. We object strongly to the present practice of loading dress materials with mineral substances. We have found quite a large number of the metallic oxides known to chemistry present in woollen garments and silk goods and we suppose that there are very few of the silk ties worn chiefly by men which do not contain a very large proportion of mineral substances. These substances, of course, give considerable weight to the material. Thus compounds of zinc, tin, and aluminium are used which dissolved in perspiration would, we have little doubt, form corrosive salts. The presence of arsenic in dress material is, however, generally accidental, the poison being introduced through the dye. It has been stated that hosiery is very liable to such contamination. With a view of investigating this point a large number of samples of cheap hosiery have recently been bought and tested by the analyst for Nottingham, Mr. S. R. Trotman, M.A., F.I.C. The results of the tests show that at least 50 per cent. of the cheaper forms of hosiery contain very distinct quantities of arsenic, the amount rising in some cases to as much as half a grain per pair of stockings. Although not highly soluble this arsenic can be extracted by water and slightly acid solutions and there is therefore a possibility, if not likelihood, of its being gradually absorbed by the system. This arsenic is due to (1) the use of materials for finishing and dyeing which are themselves contaminated and (2) the "stoving" of the yarns with impure forms of sulphur. Among the chemicals used in the finishing and dyeing operations the most likely source of arsenical contamination is sulphuric acid. A great many dyes are used in acid baths and commercial sulphuric acid may contain as much as a fifth of a grain of arsenic per pound. Arsenical contamination can be avoided by using only brimstone acid. The greater part of the arsenic found in woollen goods is, however, probably derived from the process of "stoving" being followed by insufficient washing. It is a common practice to expose woollen yarns to the action of sulphur dioxide which is usually obtained from burnt sulphur or pyrites. Sulphur obtained from the latter source will always be highly charged with arsenious oxide. The quantity of arsenious oxide found in these "stoved" yarns is sometimes extremely large. In one case a recent analysis showed the presence of one-twelfth of a grain of arsenious acid per pound of material.

THE MEDICAL AND THE DENTAL REGISTERS.

WE have received from the General Medical Council copies of these two official publications for the year 1905. The Medical Register is now a volume of 1758 pages and from the statistical table on p. 79 it will be seen that the number of registered medical practitioners, British, colonial, and foreign, on Dec. 31st, 1904, was 38,492, a net increase on the year of 614 names. The new names registered during the year 1904—viz., 1168—were 100 below the average of the last five years and 158 below the average for the last 24 years, the number registered in 1904 being lower than that in any year since 1881. The reasons for this steady and continuous falling off in the number of men entering the medical profession are complex but the disabilities and grievances of the general practitioner have lately been more publicly debated than used to be the case and undoubtedly this has had its effect. There has been during 1904 no addition to the list of colonial licensing authorities whose degrees or diplomas admit to the Register, nor has Part II. of the Medical Act, 1886, been extended to any other foreign country. We are informed by the registrar that the number of names erased from the Register during the past 12 months owing to the receipt of information of death was slightly less than the average and that the number of names erased under Section XIV. in consequence of negligence as to the communication of changes of addresses was also below the average. We are glad to learn that the members of the medical profession are becoming more alert to the advisability of keeping the Register accurate. It is highly important that the public should feel sure that in the official list of the medical profession a trustworthy guide is provided and most of the errors in the Medical Register to which in past time we have called attention have been due to the apathy of a large number of practitioners. The authorities of the Council cannot, however, exercise too much care in insuring as far as possible the absolute accuracy of the Register. We should like to know why the entry, "George Augustus

Coombe, 9, Lord-street West, Southport," still appears in the official list? We happen to be aware that he who was George Augustus Coombe very many years ago changed his name and is now Sir George Pilkington. Want of attention to such a matter as this opens wide the gate for personation. Turning to the Dental Register we find an increase of 58 names over the number on the Register for 1904. The number of persons registered solely on the ground of having been in practice at the time of the passing of the Dentists Act now amounts to 48·90 per cent. of the whole, while the number of licentiates in dental surgery of one of the authorities of the United Kingdom for the first time exceeds that of all others—viz., 50·15 per cent. The small percentage (0·95) remaining represents the American and colonial practitioners and practitioners who, in addition to being registered as in practice, are possessed of some registered medical or surgical qualification. It may be added that the number of licentiates in dental surgery who are possessed of medical or surgical qualifications, or both, continues to grow, the 2374 licentiates possessing between them 282 registered medical or surgical qualifications and three higher dental qualifications.

CURRENT THEORIES OF THE HEREDITARY PROCESS.

THE eighth and last of a series of lectures[1] on the above subject was delivered by Professor W. F. R. Weldon, F.R.S., at University College, London, on Feb. 14th, a further extensive series of experiments by Czermak on peas and beans being made the basis of a test of the Mendelian theories of segregation and gametic purity. Czermak crossed two races of peas characterised by cotyledons the growth of which was of the epigeal and hypogeal type respectively. The hybrid progeny of the crossing was found to consist of 30 plants which showed the epigeal habit as regards their cotyledons, 32 which developed the hypogeal habit, and 18 which were of an intermediate type, "a very imperfect segregation," said Professor Weldon. In the third generation none of these three types of hybrids bred true, each produced when fertilised by its own kind a mixed progeny of members of all the three kinds. Czermak made a further series of experiments on a white-flowered pea (*pisum sativum*) which he crossed with a red or purple species (*pisum arvense*). The hybrid progeny which resulted were all typically red, like *pisum arvense*. They were examples of the dominance of the red colour and as this colour had long been known to prevail in many stable and "good" species of peas such a dominance was to be regarded as an instance of atavism. These hybrids, however, were not "pure," for on inter-breeding from them different coloured individuals were obtained. Thus, of a total of 397 plants produced by inter-breeding 239 were of the red type, 75 were rose-coloured, and 83 were white, a proportion of nine red, three rose-coloured, and four white, which could not be reconciled with the Mendelian formula. Czermak suggests that if, however, white and rose were postulated as the atavistic or ancestral colours of the two races of peas, the facts would more closely conform to Mendel's formula. A further series of these experiments was carried out by Czermak on the three types of plants (239 red, 75 rose-coloured, and 83 white), each type of plant being fertilised with others of its type. Of the red plants thus treated some produced red and others white and rose-coloured offspring. Of the white plants the offspring were mostly white, while the rose-coloured plants in the majority of cases gave only a rose and white progeny. The results obtained in the last three series of experiments were such as not to be explained on any Mendelian formula. Czermak also experimented with ordinary kidney beans of different colours, bronze and white. The crossing of these varieties produced a hybrid progeny of beans with coats of dark brown colour mottled with black spots (433 seeds) and "tortoise-shell" markings and 161 white seeds. The mottled seeds when sown gave rise to both "coloured" and white-seeded beans. Of the coloured seeds 52 per cent. were of the mottled "tortoise-shell" appearance and 48 per cent. were of a uniform bronze colour, a distribution of colour which could not be reduced to any Mendelian formula. The white seed bred true. The experiments were carried out for four generations and amidst varying results one conspicuous character asserted itself in the fourth generation—viz., all mottled beans obtained in the fourth generation bred true, the process of mottling having become dominant in several strains. These were illustrations of the kind of researches which made it difficult to accept the general formula of segregation of Mendel or the hypothesis of gametic purity. A formula of inheritance propounded and developed by Francis Galton gave better results. The Galtonian theory postulated the presence of "elements" in the germ cells of one generation, which were of two kinds—viz., active or dominant elements and groups of elements, which determined the heritable characters of the progeny or second generation, and latent or recessive elements which passed through the bodies of one or more generations without appearing to affect them. By investigation of records of human family histories conducted on a large scale by Galton and his fellow workers a law of heredity has been formulated (Galton's law) which the extensive biometrical investigations of Karl Pearson have shown to be very approximately expressed by a mathematical formula. This "law of ancestral heredity" is that the two parents contribute between themselves one-half of the total heritage of the offspring, that the four grandparents contribute one-quarter, the eight great-grandparents one-eighth, and so on. Thus the sum of the ancestral contributions is expressed by the series $(\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} \ldots\ldots)$, which, being equal to 1, expresses the whole heritage. If the chromosomes of the conjugating germ cells divided always transversely into equal segments such divisions would be always quantitative and the Mendelian hypothesis of gametic purity would be always realised. But if the cleavage of chromosomes were horizontal qualitative differences would appear in the divided parts of the chromosomes and "mixture" of characters would invariably appear when different races or varieties were crossed. The most recent and careful researches seem to favour the view that both processes (quantitative and qualitative division of chromosomes) occur and that by varying segregations and varying dominances "blending" of characters and "mosaic" hybrids of all kinds are possible among plants and animals.

[1] Abstracts of the first, second, third, fourth, fifth, sixth, and seventh lectures were published in THE LANCET of Jan. 7th (p. 42) and 21st (p. 181), Feb. 4th (p. 307) and 25th (p. 512), and March 4th (p. 534), 11th (p. 667), and 18th (p. 732), 1905, respectively.

TEACHING THE TRAWLERS.

ALL that affects the food of the people interests the medical profession. We have pleasure in calling attention to a promising development of the work of the Lancashire county council in conjunction with the sea-board counties from Cumberland to Cardigan, the duty of which it is to maintain the Lancashire and Western Sea Fisheries Board and to see that the by-laws are duly observed. At Piel Island, near Barrow, a fishery school has been established in what was formerly a "marine residence." The life-history of the plaice, the sole, and other fish is taught to classes of selected fishermen in the spawning months of March to May. During this time "breeze-tanned, brawny fishermen" may be seen bending over microscopes learning the life-history of the creatures that will some day make up a day's catch. The course lasts a fortnight and then "they go back understanding why

steam trawling should not be allowed within the three-mile limit, especially with shrimp nets, and why the six-inch net, which will catch a half pound sole, is quite small enough." Recently members of the joint committee saw at the hatchery some 15 fishermen hearing and also understanding the teaching given by members of the staff. The following anecdote shows the practical bearing of the teaching: "A persistent trawler on prohibited ground was prosecuted time after time without avail. At last he was given a practical demonstration of the harm he was doing and finally taken to the 'school' for a fortnight's teaching and convinced of the error of his ways." After their schooling the men go back and enlighten their comrades. This educative work, initiated by Professor W. A. Herdman, F.R.S., and personally directed by Mr. Andrew Scott and Mr. James Johnstone at the Fisheries' School, promises to be of great value in checking the almost incredible waste of immature fish that has hitherto been the rule.

HYGIENE AND THE METROPOLITAN POLICE COURTS.

IN our issue of Feb. 11th, p. 378 (that is to say six weeks ago), we had occasion to remark in an annotation under the above heading that "the interior of a metropolitan police court, sanitarily speaking, is very seldom prepossessing, the walls and benches are grimy, and the accommodation rarely affords the calculated 'health space.' The experience of those who occasionally attend a metropolitan police court is invariably disagreeable. There is usually present a very large representation of the 'great unwashed' and it is with these that the medical man, the man of law, the expert witness, and other respectably inclined persons are compelled to 'hob-nob.' ..... Ventilation is nearly always a negligible quantity, as is evident from the fœtor which commonly pervades a court." We were not aware when writing these lines that at least one unhealthy, insanitary, and incommodious metropolitan police court was just about to be abandoned in favour of a new building designed in accordance with hygienic requirement and altogether in the direction of reform indicated in our article. A fortnight ago we received an announcement from Scotland Yard to the effect "that the new Tower Bridge police court, which is to take the place of the existing Southwark police court, will be opened for business on the 25th instant," and we were invited to send a representative to see the court before the opening day, "having regard to the terms of the article" and to our remarks on the subject from the sanitary point of view. We may say at once that the new Tower Bridge police court is a decided step in the direction of reform and not the least important feature of it is that two justice-rooms are provided, so that the present objectionable method (of which we complained) of bringing non-criminals into close contact with criminals, it is hoped, will be abolished. To keep cleanly disposed persons waiting in the court while a number of petty or criminal offences are being tried or about to be tried is intolerable and opposed to all sense of decency and respect. It is absurd that a case, say, under the Sale of Food and Drugs Act, involving the elucidation of technical points and the attendance of professional witnesses, should be placed side by side with a case of criminal offence, an occurrence which leads to the inevitable mixing of the witnesses engaged in both cases. We are glad to learn that the new police courts at Shoreditch and at Clerkenwell are being constructed on similar lines. On the whole, the sanitary arrangements at the new Tower Bridge police court are satisfactory, the courts are light and airy, and the arrangements for ventilation and warming are excellent. For the latter the low-pressure system of hot water is adopted and at each radiator there are air inlets, the warmer air inducing a flow of fresh air from the outside. The ventilation and the lighting of the court can be easily controlled from the magistrate's chair, to the left of which are a number of switches operating electric fans and electric lights. The accommodation for witnesses is good but it is somewhat limited for the general public. The benches and the furniture are of fumed oak. The public waiting hall at the entrance is admirably designed, lofty, and roomy. The cells, 30 in all, are well lighted and provided with warming apparatus and in most instances water-closets, the working of both being controlled from the outside. The floors of the cells are of asphalt and the walls have a high dado of glazed tile. The architect of the new court is Mr. J. Dixon Butler, the police surveyor, and the work, costing altogether £45,000, has been carried out by Messrs. Mowlem and Co. If our future police courts are constructed on this commendable plan witnesses and others will no longer resent being called upon to attend on the score that the environment is unhealthy and filthy, as has too long been the case.

PNEUMOCOCCIC ARTHRITIS IN A NEWLY BORN CHILD.

PNEUMOCOCCIC arthritis has been recognised only in recent years. In 1901 Dr. E. J. Cave recorded the first case in this country and exhaustively reviewed the subject.[1] He described pneumococcic arthritis as essentially a disease of adult life; out of 31 cases he found that only two occurred in children, at the ages of five and eight years respectively. In the *Archives Générales de Médecine* of Feb. 28th M. Nattan-Larrier has reported from the clinic of Professor Dieulafoy at the Hôtel-Dieu, Paris, a case, apparently the only one on record, in which pneumococcic arthritis was observed in the newly born. A male infant was born after a difficult but otherwise normal first labour on Sept. 5th, 1904. He was the subject of hare-lip and cleft palate. On the 8th a plastic operation was performed on the lip. He progressed favourably until the 12th, when there was a little sero-purulent discharge from the orifices of the sutures. When the latter were removed on the 15th union was found to be very incomplete and the wound was covered with pus. On the 20th the edges of the wound were greyish-red and covered with pus. The general condition was bad, there were vomiting and fœtid stools, and he had lost weight. On the 24th his mother noticed that he cried when placed on the right side or when the right arm was touched and that the right shoulder was red and swollen. On the 25th the swelling was greater and the arm was immobile. On the 26th he was taken to the hospital. He was wasted and pale and the fontanelles were depressed. There was considerable swelling of the right shoulder-joint which was of the size of a mandarin orange; the overlying skin was red and œdematous and showed dilated veins. Deep fluctuation was felt at the anterior border of the deltoid. Purulent arthritis was diagnosed. Disseminated râles were heard all over the chest. The spleen was palpable. The temperature was 100° F. in the morning and 101·5° in the evening. On the 27th the general condition was worse, the skin was dry, the eyes were sunken, the temperature was 104·2°, and death took place. At the necropsy thick viscid greenish pus—typical pneumococcic pus—was found in the right shoulder-joint. The synovial membrane was thickened and reddish and covered in places by an adherent fibrino-purulent layer. The articular cartilage was roughened and eroded. The lungs were everywhere congested and œdematous but especially at the bases. There were no signs of pneumonia or broncho-pneumonia. Microscopical

[1] THE LANCET, Jan. 12th, 1901, p. 82.

examination of the pus showed disintegrated leucocytes and a large number of diplococci which on staining and on culture were proved to be pneumococci. Pneumococcic arthritis usually is secondary to pneumonic or broncho-pneumonic infection (in 28 cases out of 32). In this case neither was present and the source of infection evidently was the wound in the mouth, for the pneumococcus was found in the pus. It will be remembered that the organism often occurs as a saprophyte in the mouth and therefore infection of a wound might easily take place.

THE UMBERTO I. PRIZE.

A PRIZE is awarded quinquennially in Italy in memory of H.M. King Umberto I. The subject of competition is orthopædic surgery and the adjudication is made by an international committee of three members. This year the adjudicators are Professor Bassini of Padua, Professor Mikulicz of Breslau, and Mr. Bernard Roth, F.R.C.S. Eng. There are 14 competitors for the prize, of whom nine are German, two are English, two French, and one American.

FRENCH CONGRESS OF CLIMATOLOGY AND HYGIENE OF TOWNS.

THE French Congress of Climatology and Hygiene of Towns, which was founded by Dr. Huchard in 1904, will hold its second meeting in the end of April, commencing at Arcachon on April 24th, spending the next four days there, and proceeding to Pau on the evening of the 28th. Professor Renaut of Lyons will preside. The subjects to be considered in the Section of Climatology will be the climatology, sanatoriums, and seaside hospitals of the French Atlantic coast, the treatment of tuberculosis, and the climate of Pau. During the meeting at Arcachon excursion parties will visit the forest and places on the coast. At Pau fêtes will be organised by the municipality; there will be an excursion to Biarritz on April 30th and one to Hendaye Sanatorium and Fontarabia on May 1st. Medical men, sanitary engineers, and chemists are eligible as titular members of the congress and pay a subscription of 20 francs; medical students and wives and children of titular members are eligible as associate members for whom the subscription is ten francs. A reduction of 50 per cent. is granted by all the French railways to both classes of members. Titles of communications should be sent not later than April 1st to the general secretary, Dr. A. Festal, Villa David, Arcachon. Applications for membership, together with the amount of the subscription, should be sent not later than April 5th to the general treasurer, Dr. Déchamp, Villa Tibur, Arcachon.

PREGNANCY IN A CASE OF ANTE-LATERAL FLEXION OF THE UTERUS MISTAKEN FOR EXTRA-UTERINE PREGNANCY.

IN the *Gazette Hebdomadaire des Sciences Médicales de Bordeaux* M. Fieux and M. Chavannaz have reported the following case. A married woman became pregnant for the first time at the age of 21 years. Labour was terminated by the application of the forceps for uterine inertia. At the age of 25 years she again became pregnant and labour was completed normally. After this confinement she suffered from gastro-intestinal troubles characterised by marked dilatation of the stomach and frequent attacks of hepatic colic. At the beginning of 1903 she had missed three periods and the breasts had enlarged. She consulted an accoucheur to confirm her belief that she was pregnant. He diagnosed salpingitis and passed a sound. Six days later a fœtus measuring three and a half inches was expelled. After this menstruation was regular until March, 1904, when it was expected on the 25th. Not until April 8th was there a slight discharge which on the 10th increased considerably. The hæmorrhage was accompanied by severe pains and the expulsion of what her husband, who was a medical man, regarded as a piece of membrane. The os was soft and patulous. The hæmorrhage and the expulsion of membrane continued until April 18th when it ceased and the patient resumed her ordinary life. On May 26th hæmorrhage recurred and the discharge was dark red. On the 27th there was acute pain in the lower abdomen on the left side with syncope for ten minutes. The discharge continued until June 1st. After this the general health became bad; the face was drawn, vomiting frequently occurred, and the pulse was small. The lower abdomen was constantly painful, sometimes on the left and at other times on the right side. A tumour of the size of a Tangerine orange was felt in the hypogastrium on the left of the median line. On the 6th this tumour became the seat of painful crises. Measurement of the uterine cavity showed that it was eight centimetres deep and this operation was not followed by any ill result. On the 12th M. Fieux saw the patient in consultation. The diagnosis of extra-uterine pregnancy seemed to be clear. To the left of the middle line was a tumour of the size of a small orange, rounded, painful, and scarcely moveable. It was hard and never appeared to have shown change of consistency. The os was softened and pushed backwards and a little to the right. The anterior and left fornices were obliterated by the tumour which bulged into the pelvis. A deep groove separated the tumour from the part of the uterus accessible to the finger in the vagina. It seemed that the uterus could be slightly oscillated by the finger in the vagina, while with the hand on the abdomen the tumour was felt almost completely fixed. On the 25th the abdomen was opened and the tumour was found to be the body of the uterus flexed forwards and to the left. It was placed in a good position without difficulty for there were no adhesions. A three months' gravid uterus was then evident. The right ovary contained a cyst of the size of a pigeon's egg and was removed. Good recovery followed, though on the fourth and fifth days after operation there were pains resembling those of labour. At the time of the report the pregnancy was in the ninth month and was pursuing its normal course. M. Fieux and M. Chavannaz point out the great resemblance of the case to one of extra-uterine pregnancy both in the history and the physical signs but they call attention to one point in which the bimanual examination was not satisfactory. The independence between the supposed tumour and the body of the uterus was not evident to the hand placed on the abdomen. They recall the advice of Varnier: "It is above rather than below that the independence between the body of the uterus and a pelvic tumour should be felt in order to affirm that it is juxta-uterine."

THE ANNIVERSARY DINNER OF THE MEDICAL SOCIETY OF LONDON.

THE 132nd anniversary dinner of the Medical Society of London, which was held on March 15th at the Whitehall Rooms, was attended by a large and representative gathering of Fellows and by several distinguished guests. Some excellent speeches were delivered, the most prominent note in which was that of confederation. Sir William S. Church emphasised the advantages which would accrue from an amalgamation of the medical societies of the metropolis and expressed a hope that any difficulties standing in the way would be successfully overcome. He believed that this would be possible to arrange without necessarily destroying the individuality and special characters of the various component bodies. Sir Arthur W. Rücker, in responding for the guests, spoke in similarly strong terms of the project for centralising the teaching of the preliminary scientific subjects which has been energetically taken up by the

University of London with a view to giving the medical student in London advantages equal to those enjoyed by the students in large provincial universities. Judging from the applause with which the exposition of both schemes was greeted it would seem that each had the hearty approval of the audience.

THE HEALTH OF THE KING.

ON Saturday, the 11th inst., His Majesty received a chill, probably when driving in his motor car. Some bronchial catarrh with a slight rise of temperature and increase in the pulse-rate ensued so that it was found necessary by his medical attendants to advise him to remain indoors in an equable temperature. We are glad to say that His Majesty has progressed satisfactorily and on Wednesday was able to go out.

ANTE-NATAL INJURIES.

A VERY interesting question was raised in a case before the Exeter magistrates when a woman, in applying for a separation order said that her last child had been born with black eyes and a discoloured face as the result of her husband's violence. The medico-legal question involved is one of much interest. What is the usual effect on the fœtus in utero of traumatism applied to the abdomen of the mother? The amount of injury which a pregnant woman may sustain and yet give birth at full term to a healthy child is astonishing. One of the most remarkable cases is that recorded by Corey. The patient, a woman three months pregnant, was tossed by a cow. There was an abdominal wound through which protruded the great omentum, the descending and transverse colon, most of the small intestine, and the pyloric end of the stomach. Three and a half hours after the accident the viscera were replaced under an anæsthetic and the edges of the wound were pared and sutured. The woman made a perfect recovery and gave birth at full term to a healthy and uninjured child. Tiffany, who has collected a number of such cases, quotes one of a woman who at the eighth month of pregnancy was almost buried by the fall of a clay wall and received a number of wounds on the head, 32 stitches having to be inserted. In spite of this the pregnancy continued to full term and the patient gave birth to a healthy female child. The escape of the fœtus from injury in such cases is no doubt to be explained by its protected position in the mother's abdomen and by the presence of the liquor amnii. Unhappily in many instances of severe abdominal injuries the outcome is not so fortunate and that such injuries may result in serious damage to the child is only too certain. Neugebauer, for instance, relates the case of a woman who, when near full term, committed suicide by jumping from a second-floor window. She ruptured her uterus and a dead fœtus with a fracture of the parietal bone was found lying free in the abdominal cavity. A great many of the recorded cases, however, especially in the older literature, in which various injuries, for example, fractures and dislocations of the fœtal bones, are described, must be received with scepticism, as such conditions are more often due to defects of development than to direct injury to the fœtus in utero. An instance of this kind is no doubt the case recorded of a woman who at the seventh month of pregnancy fell and struck her abdomen against a tub. She was delivered at full term of a child who had a deep cleft in the cheek involving the anterior part of the helix and antihelix of the left pinna and extending forwards as far as the nose. The external auditory meatus was also obliterated. This was in all probability not a case of injury at all but an example of an intermaxillary fissure of the face. Such a fissure usually starts at the angle of the mouth and pursues an outward and upward course towards the ear. It is most commonly met with on the left side, as in this case, and is often associated with various deformities of the external ear. It is usually asserted that intra-uterine fractures are due to external violence but this is far from always the case. Numerous examples of fractures involving the long bones and the cranial bones can be collected, especially from the older literature. Gurlt has recorded a large number of such cases and his paper proves that they are by no means uncommon. Their explanation, however, is not so simple. In many instances they are met with in association with other deformities or complete or partial absence of some of the other bones. The view put forward by Ballantyne with regard to these conditions is probably the correct one—namely, that the great majority are really due not to external violence but to the result of amniotic adhesions. Further support is given to this view by the fact that not infrequently a cicatrix has been found over the site of the fracture and this is explained by the supposition that a band of the amnion was attached at this point and produced by its traction distortion of the soft cartilage of the developing bone and as a result the appearance of a healed fracture. In the same way it is probable that most of the recorded cases of intra-uterine dislocations are also not the result of direct trauma but are due to anomalies of growth from the pressure exercised by an ill-developed and unseparated amnion. The curious cases of so-called recent wounds of the skin which are met with from time to time in newly born babies, and which have always been the cause of a great deal of curious speculation, must be explained in the same way and are in reality due to the rupture of an amniotic adhesion during parturition. The tearing through of such an adhesion close to the skin would give rise to a raw area. The Exeter magistrates apparently believed the story of the woman who applied for their assistance and it is possible that they took a correct view of the case. That severe injuries inflicted upon the mother may affect the fœtus in utero is certain and it would be rash to assert that in certain circumstances, as, for example, a deficiency of the liquor amnii, even comparatively slight violence could not cause damage to the unborn child. At the same time in considering such cases the medical man must always remember that a very large number of so-called injuries are in reality faults of development and are due to trauma it is true, but to trauma produced by the pressure of an undeveloped amnion and not to trauma the result of external violence.

A PRIZE of £100 and a silver cup have been offered by Mr. Edgar Speyer, a member of the General Council of King Edward's Hospital Fund for London, and a generous supporter of the Fund, for the best essay on "The Economical Management of an Efficient Voluntary Hospital." The Prince of Wales as President of the Fund has approved Mr. Speyer's action and has consented to present the prize to the successful essayist. The competition is only open to the paid secretaries and assistant secretaries of voluntary hospitals in the United Kingdom of Great Britain and Ireland. Further particulars and conditions will be supplied on application by the honorary secretaries of the Fund, 81, Cheapside, London, E.C.

THE fourth Congress of the German Society of Orthopædic Surgery will meet at Langenbeck House in Ziegelstrasse, Berlin, on April 25th, the day before the meeting of the German Surgical Society.

THE King has been pleased to appoint Dr. Noel Dean Bardswell, at present director of the Mundesley Sanatorium, to be medical superintendent of the King Edward VII. Sanatorium. It is understood that Dr. Bardswell will visit

foreign sanatoriums for some little time before commencing his work at the King's Sanatorium, which, it is hoped, will be opened in the early part of 1906.

IN reference to our leading article upon the case of Miller *v.* Miller and Fowler we should have pointed out that Dr. Fowler's case was conducted throughout to its triumphant issue by the London and Counties Medical Protection Society, Limited, whose assistance was sought by Dr. Fowler at the beginning of the case.

Lord Strathcona will take the chair at the festival dinner of the National Hospital for the Paralysed and Epileptic on Thursday, April 13th, in the Whitehall Rooms of the Hôtel Métropole, at 7 P.M. Communications should be addressed to Mr. Godfrey Hamilton at the hospital.

THE annual meeting of the Coal Smoke Abatement Society will be held, by permission of Mr. Frederick Harrison and Mr. Cyril Maude, at the Haymarket Theatre, London, on Thursday, March 30th, at 3.30 P.M. His Grace the Duke of Fife, K.T., will preside.

THE death occurred last week of Miss Jane Catherine Shaw-Stewart who assisted Miss Florence Nightingale as a nurse during the Crimean war and was afterwards matron-superintendent of Netley Hospital, which position she held till 1868.

THE GARCIA CENTENARY.

Señor Manuel Garcia, the eminent teacher of singing, through whose labours laryngoscopy has become one of the most important handmaids to the medical profession in its battle with the dread diseases of the throat, celebrated the hundredth anniversary of his birthday on March 17th, when representatives of music and science from all parts of the world assembled at the rooms of the Royal Medical and Chirurgical Society, 20, Hanover-square, London, W., to do him honour. Among those present were Madame Garcia and Miss Garcia.

As Señor Garcia entered the room at noon wearing the insignia of the honorary Commandership of the Royal Victorian Order conferred upon him by the King, a volley of cheers greeted him from the assembled company. This hearty reception he acknowledged by bowing and immediately afterwards seated himself in the chair upon the dais which had been specially placed there for him as a seat of honour.

Sir FELIX SEMON, chairman of the Garcia committee, then announced that His Majesty the King had just received Señor Garcia at Buckingham Palace in order to express to him his congratulations and his recognition of all that Señor Garcia had done for medicine and music. At the same time the King had conferred upon him the honorary Commandership of the Royal Victorian Order. His Majesty, at the conclusion of the interview, expressed a wish to be personally represented at the banquet, and said that he would desire his Lord-in-Waiting, Lord Suffield, to attend as his representative.

The Marquis DE VILLALOBAR (the Spanish Chargé d'Affaires) then delivered a congratulatory message from the King of Spain and invested Señor Garcia with the Order of King Don Alphonse XII.

Professor FRANKEL said that the genius of Señor Garcia had thrown light on the dark places of the larynx and the source of the living human voice. In recognition of his merits the German Emperor had conferred upon him the great gold medal for science. This rarely awarded distinction he now had the pleasure of presenting to Señor Garcia at the request of the Minister for Public Instruction.

An address from the Royal Society was then presented by Sir ARCHIBALD GEIKIE (principal secretary), Professor FRANCIS DARWIN (foreign secretary), and Dr. HALLIBURTON, F.R.S. The address was as follows:—

The Royal Society of London join very cordially in congratulating Manuel Garcia on the celebration of his 100th birthday. The President and Council recall with much pleasure the circumstance that the Royal Society afforded in their proceedings (March 22nd, 1855) the medium for publishing to the scientific world the memorable paper in which Señor Garcia laid the foundation of the experimental study of voice production and, at the same time through the laryngoscope, provided the starting point for a new department of practical medical science. The Royal Society trust that Señor Garcia may still continue for years to come to enjoy in good health the esteem which his scientific achievement and his high personal character have brought to him. (Signed and sealed on behalf of the Royal Society for Promoting Natural Knowledge) WILLIAM HUGGINS, President.

Sir ARCHIBALD GEIKIE (corresponding member of the Prussian Academy of Sciences) read the following telegram:—

To the first investigator of the human voice by a new method which for all time has bestowed a signal service on art, on science, and on suffering humanity, the Royal Prussian Academy of Sciences sends on his 100th birthday its most respectful congratulations.—WALDEYER, Secretary.

An address was next read from the University of Königsberg which had conferred on Señor Garcia the honorary degree of Doctor nearly half a century ago.

An address was then presented from the Victoria University of Manchester by Professor STIRLING, F.R.S., Dr. W. MILLIGAN, and Dr. S. MORITZ, one from the Medical Faculty of Heidelberg, and another from Señor Garcia's old pupils, among whom were Mr. Santley, Madame Blanche Marchesi, and Herr and Fräulein Stockhausen.

Mr. OTTO GOLDSCHMIDT, the husband of Jenny Lind, said that his late wife to the end of her days venerated Señor Garcia who helped her to take the position in the musical world which she attained.

An address from the Royal Academy of Music was presented by Mr. Thomas Threlfall (chairman), Sir Alexander Mackenzie (principal), Mr. Walter Macfarren, Mr. Edward R. Cooper (honorary treasurer), Cavaliere Randegger, Mr. John Thomas, Mr. F. Walker, and Mr. F. W. Renaut (secretary), and an address from the Royal College of Music, was presented by Sir Hubert Parry (principal), Sir Walter Parratt, Mr. Henry Blower, Sir C. Villiers Stanford, Dr. C. Harford Lloyd, Mr. Eaton Faning, Mus.Doc., the Hon. Spencer Lyttelton, C.B., and Mr. Frank Pownall.

A large number of messages of congratulation were also sent by British and foreign laryngological societies and associations.

Dr. BOTELLA (Madrid), the official delegate of the Spanish Government and of the Spanish Laryngological Society, said that the laryngoscope had put within the range of science many diseases the existence of which could never have been suspected, had made possible their treatment, and had saved from suffering and death many lives. The Spanish Government sent its enthusiastic congratulations and the Spanish Laryngological Society begged Señor Garcia's acceptance of the office of "President of Honour."

The address from the Laryngological Society of London, of which Señor Garcia is the oldest honorary member, referred to him as "dear and revered master" and expressed the wish that "we may often have the pleasure and privilege of seeing the venerable father of laryngoscopy amongst us."

It was announced that several foreign societies had conferred their honorary membership upon Señor Garcia.

The proceedings were brought to a close by the presentation to Señor Garcia of his portrait painted by Mr. Sargent, R.A.

In returning thanks Señor GARCIA (addressing the Spanish Chargé d'Affaires) said: Sir, will you tell my King for me how deeply grateful I am to him for thus remembering that in this country, which has sheltered me so long, he has a loyal and a loving subject? Will you express my overwhelming sense of this great honour and convey to him my reverent—if a subject may be so bold—my loving thanks? You, Sir (addressing Professor Fränkel), will undertake of your great courtesy to make known to His Majesty the German Emperor my deep sense of the honour he has conferred on a stranger and you will ask him to accept my grateful thanks. You, Sir (addressing Sir Archibald Geikie), who represent the illustrious English society that first gave me a hearing (the Royal Society); you, Professor Stirling, by whom the learning of England's second capital (the University of Manchester), sends me greeting (at this point Señor Garcia handed the MS. of his reply to Sir Felix Semon, requesting him to finish reading it)—you who have come from distant Königsberg to recall the grateful memory of those who

gave the unknown man a place among them; you, who represent the world-renowned Academy of Sciences of Berlin, among the members of which are some I count dear friends; and you, dear Sir, who bring me the greeting of a city of youth whose very name seems to set joy bells ringing; you, Sir, from Heidelberg; how shall I thank you all, if your good will should fail to interpret my poor faltering words? You, doctors, laryngologists, dear friends, to whom the little instrument to which such kind allusion has been made owes all its power for good; you, representatives of the great music schools of London in one of which I passed so many years, working happily beside brother musicians and to the other of which I have so often come to mark with pride our own great art of music; you, too, my pupils, among whom it rejoices me so keenly to welcome faces missed for many years and found again to-day, while others have been with me, near and dear; to you all, thanks, from an old heart that he did not know what youth it still possessed till it expanded to embrace you all. This portrait from the hand of this great master, which grew in happy hours, too few for me since they passed so rapidly in his companionship, shall be my pride and joy in the days to come. (Here Señor Garcia resumed his speech.) If you will bear with me a moment longer I should like to say one little inadequate word of thanks to him from whose initiative this wonderful demonstration has sprung, my friend Sir Felix Semon, with whose name I link that of an institution dear to me beyond all others, the Laryngological Society of London, and its chosen representative, that social Atlas, the Garcia Committee.

In the afternoon there was a special sitting of the Laryngological Society of London, at which the numerous distinguished representatives of the learned societies were present. A large number of pathological specimens drawn from the medical museums, specially selected and arranged by Dr. L. H. Pegler, the curator to the society, were exhibited. Among the naked-eye exhibits were the following:—Mr. R. Lake: Pachydermia of the Larynx in a man, aged 34 years. The glottis was much stenosed and completely closed in one situation (Royal College of Surgeons Museum). Dr. E. Clifford Beale: Lymphoma of the Larynx, involving the epiglottis, the ventricular band, and the arytenoid cartilage of the left side (reported in THE LANCET of Oct. 15th, 1887) (Great Northern Central Hospital). Mr. Charters J. Symonds: Carcinoma of the Larynx; complete extirpation (Guy's Hospital Museum). Sir Felix Semon: Carcinoma of the Larynx; partial excision for squamous-cell carcinoma of the ventricle of Morgagni (the case of the late Mr. Montague Williams) (St. Thomas's Hospital Museum). Mr. H. T. Butlin: Carcinoma of the Larynx; partial excision of the true and false vocal cords for carcinoma of the under surface of the vocal cord in a man, aged 50 years (St. Bartholomew's Hospital Museum). Mr. P. R. W. de Santi: Papilloma of the Septum Nasi removed from a man, aged 89 years; no recurrence (Westminster Hospital Museum). Mr. Butlin: Œsophageal Diverticulum removed by operation from a man, aged 50 years (St. Bartholomew's Hospital Museum). Mr. Arthur H. Cheatle contributed a microscopical section of Polypoid Growth of Lymphoid Character, springing from the Right Supratonsillar Fossa (published in the Proceedings of the Laryngological Society, vol. vi., with coloured drawing).

In the evening at the Hotel Cecil Señor Garcia was entertained at dinner. There was present a large and distinguished company of ladies and gentlemen.

After the loyal toasts had been duly honoured the Chairman (Mr. CHARTERS J. SYMONDS) called upon the Marquis DE VILLALOBAR to read a message from the King of Spain who had conferred upon their distinguished guest the Grand Cross of the Order of Alphonse XII. The message was as follows:—

By command of His Majesty the King, congratulate personally Señor Garcia on the day of the celebration of his hundredth birthday; convey his royal best wishes to the grand old Spaniard who by his invention and works has glorified and exalted the name of Spain.

Mr. Charters Symonds, resuming, said that he had heard a whisper that the honour conferred by the King of Spain carried with it the title of his Excellency.

The toasts of "The King of Spain" and of "The German Emperor" having been honoured, Sir FELIX SEMON proposed the toast of "Señor Manuel Garcia." He said that to very few human beings was it given to attain the patriarchal age of 100; fewer still lived to that age in full possession of their mental and bodily faculties; rarest of all was it that men who had made their mark in the world should thus be favoured. In our own days he only knew of two similar events—the centenaries of Sir Moses Montefiore and of Professor Chevreul. That night they witnessed the unusual spectacle of two liberal professions which while always friendly, ordinarily had few points of contact—music and medicine—uniting to vie with one another to do honour to their great centenarian. Referring to the invention of the laryngoscope, with which the name of Señor Garcia was so intimately associated, he said that it was no exaggeration to call their distinguished guest a benefactor of mankind. The toast was drunk with great heartiness and the company sang "For He's a Jolly Good Fellow."

Replying with emotion Señor GARCIA said that to all those who had assembled to honour him he could say nought, nought except this, "God bless you, every one."

At the conclusion of the dinner a congratulatory telegram was received from the Prime Minister.

MEDICINE AND THE LAW.

Dustbins on the Kerbstone.

A RECENT prosecution at the South-Western police court is of considerable interest to many householders and to local sanitary authorities. The complainant was Mr. J. W. Baines, a barrister and assistant legal adviser to the Local Government Board, residing in Carlton-road, Putney, who summoned the Wandsworth borough council for failing without reasonable excuse to comply with a written notice given by him and asking for the removal of refuse from his residence. The difficulty arose out of a by-law prepared by the London County Council and approved by the Local Government Board requiring occupiers within a prescribed area under a penalty to facilitate the removal of house refuse by placing it in receptacles on the public footway. Householders in the district in which Mr. Baines lives received at the close of last year notices from the borough council that on and after Jan. 1st, 1905, the refuse of houses in specified roads would be removed under this by-law between 7 and 9 A.M. In Mr. Baines's case, and no doubt in the cases of many of his neighbours in Putney, this necessitates the carrying of the whole of the refuse from a villa of a substantial size down a carriage-drive, as well as across the footway to the kerbstone, at some time presumably not much later than 7 A.M. Mr. Baines declined to order his servants to do this and instead invited the council to remove the refuse for itself under Section 30 of the Public Health (London) Act, 1891. The borough council in its turn declined, basing its refusal on the County Council by-law referred to above, and Mr. Baines issued a summons against it. After considerable argument from counsel Mr. Francis gave his decision in favour of Mr. Baines and imposed a fine of £1 upon the council with 25 guineas costs, offering at the same time to state a case for an appeal to the Divisional Court. He did not hold that the County Council by-law was bad but that it was not intended or suited for universal application. It was, in his opinion, made to cover certain cases and the way in which the council had tried to enforce it was wrong in that it had refused to remove the household refuse from the premises in question. He also regarded the placing of dustbins on the kerbstone as an obstruction of the highway. Considerable sympathy with Mr. Baines is no doubt felt by many persons whose residences are similarly situated to his, and not unreasonably. The object of the council is no doubt to effect an economy of trouble, time, and money in the removal of dust and other refuse from houses. The bin placed upon the kerbstone unquestionably does this, particularly in streets of continuous houses, some of which perhaps contain many tenements and to a certain extent the system has the advantage of preventing accumulations of offensive matter indoors. On the other hand, the dustbin on the kerbstone and the present plan of emptying it by hand are by no means ideal from a sanitary point of view, as any observer on a windy day can satisfy himself. From Mr. Baines's point of view it is easy to see that to have the refuse of a large house carried down a drive by the householder's domestic servants is difficult and almost impossible in many circumstances. It is not at any time women's work and in wet weather or in snow they would be still more unfitted to perform it. Even in large houses where menservants are kept the butler and the footman would hardly

relish being turned into dustmen. The work, in fact, is such that men specially employed to perform it are practically necessary, whether a local council employs them or the householder. The appeal upon the case which apparently Mr. Francis is to state will be watched with much interest, as the possibility of enforcing the County Council by-law universally within the County of London is no doubt one of the issues involved.

The Prevention of Live Burial.

The London Association for the Prevention of Premature Burial has prepared a Bill which presumably will be introduced in the House of Commons by a private member and doubtless will share the fate of many similar documents. It contains proposals which, if for no other reason than on account of the expense involved, will fail to commend themselves to ratepayers. It empowers local authorities to provide "waiting mortuaries," warmed, lighted, and ventilated, for the reception of bodies should the surroundings in the home of the deceased not be suitable for the purpose. In these waiting mortuaries the bodies are to lie until the requirements of the proposed Act are complied with and they may be furnished with a hall for bodies of no particular classification, with an apartment for infectious cases, another for cases that may require judicial action, a post-mortem room with laboratory and apparatus for resuscitation, and quarters for a resident medical superintendent. The Bill also proposes that there should be qualified medical practitioners appointed by the Secretary of State as death verifiers to hold office in fixed districts and to give their whole time to the work without taking private practice. The method of certification, the duties of death verifiers, and various other matters, including rewards for persons who resuscitate apparently dead persons, are contained in 16 sections, one of which provides that the proceedings to be taken under the new law shall not be rendered unnecessary even by the fact that a coroner's inquest shall have been held. All offences against the provisions of the Bill are to be misdemeanours and one of the offences which may render a medical officer of health liable to indictment reads somewhat quaintly. He may if he thinks fit refuse permission for the body to lie in the house where death took place, in which case it will have to go to one of the mortuaries mentioned above, but "if the medical officer of health, having received such a request and undertaking as aforesaid, shall remove the body without having delivered a written statement of his reasons or shall insert in such statement frivolous or unintelligible matter, he shall be guilty of an offence against this Act." The London Association for the Prevention of Premature Burial may find the opinions of those who differ from it unintelligible and may even encounter what seems to it to be frivolity before such a Bill as that under consideration becomes law; but frivolity in a medical officer of health when performing new and responsible functions in addition to his already onerous duties need hardly be anticipated, nor are these competent and carefully selected officials likely to be unintelligible, even without the fear of prosecution to stimulate them to lucidity of expression.

Looking Back.

FROM

THE LANCET, *SATURDAY*, March 24, 1827.

I wish, however, that you would consider this point, how important a thing it is that there should be a true balance between the quantity of circulating fluids, and the powers that circulate those fluids. If *perspiration* were to be suppressed, why the blood would be redundant with water, but then in that case the kidney takes up the secretion. The kidney prepares phosphoric acid; and I suppose I need not try to convince any gentleman present that there is no phosphoric acid in the blood, if there was it would coagulate the blood; there is *soda* in it. What is there then to be said of this secretion? The albumen must be admitted to be there; it must be admitted that there is phosphoric acid in the kidney; and what are we to say with respect to that? Why, the secretion is a new formation—that the phosphoric acid is a new production; and then the question is, how is this effected? This is the grand problem proposed a long time back, and perhaps not answered, you will say, at present—How, from one kind of blood, can such dissimilar substances be got? And the old anatomists were looking to the arrangement of the vessels, to the tortuous course of the arteries and their branches, to find this out; but I defy any man to conjecture what use can result from muscular formation save that of filtration: it would spread that which was in it, but it could never make a new compound. Now Haller himself seemed to conceive that the result of these things was very much the result of vital feeling, for he has quoted the case of a hysterical female secreting nothing but colourless urine, watery urine, but he has let this nervous fit be suspended, and the kidney has again performed its functions and proper urine been secreted, more loaded too with animal substance and salts on account of the temporary suspension during the hysterical fit, therefore vital action has a great deal to do with it. But it was John Hunter who proved that vital action was the cause of all this: it was proved with respect to what we know takes place with regard to poison; a specific incision is made, a specific application of poison is made, and a specific secretion takes place. But if you were to say, how are these things prepared? I think no man in his senses can deny, but that it is by electrical operation; that electricity is the great agent of nature for the purpose of composition and decomposition of all surrounding substances, and we cannot doubt that the same agent inheres in animal bodies. A man who doubts of this, certainly could never have rubbed a black little *kitten* in the dark, or pulled off a black silk stocking in the dark; there is no doubt of electricity being thus employed. But I say it would be absurd to doubt that this was the agent for producing composition and decomposition in animal bodies after what Sir Humphrey Davy has told us. I cannot express my opinion on this subject now, in any different way to what I am accustomed to do. If any man had told me, in the early period of my life, that I should live to see chemical action explained, I should have said, well, I shall certainly not die at a less age than that of *Methuselem*. (Laughter.) But it has been done, and by Sir Humphry Davy; he showed that it depended on the matter it possessed. I was present at his lectures, when I saw performed what formed the ground of the papers that were given by him to the Royal Society, and which I had read, but the reading of them certainly did not produce that impression on my mind which the ocular demonstration of his performance did. I saw the thing done, and therefore I had conviction brought home to my mind. When I saw him make some *potash* pass through sulphuric acid, and come out potash on the other side of the dish, I said, it's wonderful! it's wonderful indeed! Why, who would have thought it! Who could have thought that a person could have mixed potash with sulphuric acid, and that it should have remained the same! Why, it is counteracting nature by using her own agents. Who could have thought it! Put potash into sulphuric acid, and what is the result! Why, that the most violent actions take place till they combine together, and then they are very sociable. On seeing this, I could not but think, that if I had been lecturing to the class Sir Humphry Davy was then lecturing to, which was principally composed of *ladies*, I should have said, now ladies, this is as wonderful as if I were to place a barrel of gunpowder before you, and, presenting you with some hot embers, you were to throw them into the powder, and they were to come through it without igniting it. Then I do not doubt but it is electrical, but electrical under the influence of the nervous system, and all the functions of the body are governed by that system.[1]

[1] Excerpt from "Mr. Abernethy's Physiological, Pathological, and Surgical Observations, delivered in the Anatomical Course of Lectures at St. Bartholomew's Hospital. On the Kidney."

FOREIGN UNIVERSITY INTELLIGENCE.—*Berne:* Dr. Fritz Veiler-Bruggiser has been recognised as *privat-docent* of Internal Medicine.—*Göttingen:* Dr. Max Borst of Cologne has accepted the offer of the chair of Pathological Anatomy.—*Gratz:* Dr. Adolf Sachsalber, *privat-docent* of Ophthalmology, has been granted the title of Extraordinary Professor.—*Naples:* Dr. Pietro Imbriaco has been recognised as *privat-docent* of Diseases of Traumatic Origin.—*Tübingen:* Dr. Finkh has been recognised as *privat-docent* of Psychiatry and Dr. Ottfried Müller as *privat-docent* of Internal Medicine.

MEDICINE, ITS PRACTICE AND ITS PUBLIC RELATIONS.

CHAPTER V.[1]

THE GRIEVANCES OF THE MEDICAL PROFESSION (*continued*).

Hospital Abuse.—The Birmingham Hospital Saturday Fund.—Working Men's Subscriptions.—The Municipalisation of Hospitals.—The Place of the Provident Dispensary.

NEXT to the evils of contract practice perhaps those of so-called "hospital abuse" weigh most hardly on the general practitioner and here, again, the subject has been so much written upon and so thoroughly threshed out that nothing more than a brief recapitulation of admitted facts is necessary. But however threadbare the subject may appear it must receive notice here, because, firstly, no record of the present state of the medical profession can be complete and, secondly, because from year to year the abuse grows and takes on fresh features, though the substance of the abuse in all instances is the same.

Hospital Abuse.

Everyone knows that many institutions which are avowedly and necessarily supported by charity admit to their wards or their out-patient departments for gratuitous advice and treatment sufferers who can pay for medical assistance. The extent to which this occurs is very large, and under such methods four sets of people are defrauded—the charitable public, the honorary staff of the hospital, the general practitioner, and the genuine poor; the charity is used for purposes for which it was not designed, the medical profession loses fees for medical service, and the class of sick persons to whom hospital aid is due is elbowed aside. The abuse is of quite old standing. 36 years ago Joseph Sampson Gamgee, the well-known Birmingham surgeon, founder of the Hospital Saturday Fund and a most liberal and enlightened thinker, pointed out the bad management prevailing in the out-patient departments of hospitals. He complained that the treatment consisted in the mere administration of physic in all cases, to the neglect of full inquiry into the cause of the disease and of well-considered advice for restoration to health; he did not mean to blame those responsible for the treatment, for he must have been aware that the circumstances which justified his words were brought about by the permanent overcrowding of the departments. Since this date the evil has grown worse. The number of out-patients attending the 92 London hospitals has been shown by Mr. C. S. Loch, secretary of the Charity Organisation Society, to have increased from 1,082,259 in 1887 to 1,448,026 in 1897 and to 1,584,987 in 1900. Mr. Loch submitted these figures to the meeting of the British Medical Association held in Manchester in 1902, at which meeting a valuable discussion took place which revealed the evil as on the increase in many parts of the kingdom, and there is no evidence to show that any arrest has taken place. The number of hospitals, particularly of special hospitals, has increased; the number of beds has been raised in existing institutions and special departments have been added, while in many cases there has been no corresponding addition made to the *personnel* of the medical staff. As a result the thorough performance of their work cannot always be expected from the medical staff and a valid excuse for the scamping of duty has been established in the very highest department of medical practice. From the north and south of England, and as much from such great towns as Manchester and Birmingham as from London, the complaints of general practitioners now come that the competition of the hospitals, especially of the out-patient departments of hospitals, is ruinously unfair. From the more populous centres in Scotland and Ireland, especially from Belfast, we hear the same story. The abuse has not grown up as the result of any apathy on the part of the medical profession, for general and consulting practitioners alike have seen the evil rising and have taken some measures, if no very vigorous ones, to repress it. In 1899, for example, a conference on hospital reform was promoted in London at which Sir William Broadbent, Mr. Timothy Holmes, and Mr. C. H. Warren, secretary of the Metropolitan Provident Association, spoke, as well as medical men representing such typical medical centres as Liverpool, Manchester, Birmingham, Bristol, and Brighton. The various efforts that had been made by means of inquiry into the pecuniary position of patients were detailed, the use and abuse of letters of recommendation and the charge of fees to the patients were inquired into, and the widespread nature of the evil was made manifest. The conference was not a marked success. Attendance at the meeting was small and certain of the individual speakers had no great grasp of their subject. They did not seem to recognise that hospital abuse is only one feature of a general want of organisation in the medical profession and so wasted time in proving the already proven.

Hospital abuse, like the abuse of contract practice, is an expression of the uncertainty among medical men as to their professional aims, so that what one man considers to be philanthropy another considers to be mischievous weakness. Hospitals and their medical staffs claim credit for their work and subscriptions from the public on the ground of the numbers seen at the out-patient departments. The quondam students at those hospitals and pupils of those consultants declare that their most harmful rivals in practice are just the institution and the staff from whom they have the best right to expect help. It has been said that Joseph Sampson Gamgee, in addition to being an energetic medical reformer, founded the Hospital Saturday Fund. The Hospital Saturday Fund is an admirable charity in its way, but if its developments could have been foreseen, with their bearing upon the question of hospital abuse, no medical man would have founded it. Attention has been called often to the fact that in some towns the working-class vote predominates in the management of hospitals and this is a fact the bearings of which have not yet been brought home to the medical profession. There is no reason why working men should not contribute their share to the public charities but that is not the way in which they view their subscriptions to hospitals. The public have been accustomed to subscribe to friendly societies, to medical aid clubs, to slate clubs, and to trade unions and similar institutions of all sorts. In each and every case the money which they give comes back to them in hard cash or in services rendered, and, further, they generally have a vote in the management of the funds which they thus raise. Consequently they imagine that if they support the hospitals they should not only have a vote in the management of the hospitals but that the hospitals are bound to render them services in exchange for the money subscribed. The workmen do not give to the hospitals as an act of charity but they pay so as to wipe out the charitable aspect of the institution. They propose to purchase, as it were, a right of entry to the hospital and a right to be treated, not as the recipients of charity, but as provident people who have insured themselves against the risks of sickness or accidents. This is the feeling that undoubtedly prevails, though it has not yet been formally inscribed in any document, agreement, or covenant. THE LANCET in a series of articles on hospital abuse has given a very full account of the growth and development of the Birmingham

[1] Chapters I., II., III., and IV. were published in THE LANCET of Feb. 18th (p. 447) and 25th (p. 517) and March 4th (p. 593) and 18th (p. 736), 1905, respectively.

Hospital Saturday Fund.[2] From these it is apparent that some eight years ago 75 per cent. of the workmen of Birmingham subscribed to this fund and that they raised about £15,000 in the year. There is good reason to suppose that the sum which is now subscribed by them amounts to little short of £20,000. As most of the money is raised by means of penny weekly subscriptions and as the total population of Birmingham, including women and children, is very little over half a million, it is safe to say that the vast majority of the working men are subscribers. When working men know this they must feel that they are masters of the situation, especially as with the increase of working class support there has been, and will be, a decrease in the amount of subscriptions received from the wealthier classes.

In certain industrial districts in the north of England the workmen subscribe such large sums that not only do they conceive that they are paying for the treatment they receive but maintain that they have a right to govern the hospitals. This is the direct beginning of the municipalisation of our charitable institutions, for if the majority voluntarily tax themselves to obtain control of the hospitals they will soon demand that the minority should be coerced into paying their share of the required contributions. The subscription would thus be converted into a tax and the municipal administrators would manage the general hospitals as they already manage the hospitals for the treatment of the insane and for the isolation of infectious cases. This may represent the extreme outcome of the present situation but unless the hospitals take measures to obtain the bulk of their financial support from the wealthy and well-to-do classes it is the obvious issue. And here some may say, What of it? They point to the financial condition of some noble hospitals in the centre of rich cities and ask if it would not be better to end the perpetual begging of these great charities by placing them at once upon the rates. To medical men the only answer possible is, No. When grave doubts as to the purity of hospital administration existed, as they did half a century ago, the movement towards rate-supported hospitals was a natural one. In those days the wealth of some of the hospitals, especially the London hospitals, the value of some of the lectureships, and the nepotism of some of the managers, made the suggestion of public control reasonable. Alas, that wealth has in most cases gone and with fair competition for appointments and meagre payment for lectureships have vanished the arguments for municipalisation of the charities. And it should be observed that medical opinion on this matter has been backed by shrewd and influential leaders of men, men of the unequalled social experience of His Majesty the King, men of the bottomless purses of Lord Rothschild and Mr. Beit, men of the business instincts of Sir Sydney Waterlow and the late Sir John Maple. They have all seen that the poverty of the hospitals ought to be met and allayed by charitable offering, so as to preserve the present relation of the hospitals towards the public. A big general hospital supported by the rates and therefore governed by the municipality would inevitably get out of touch with its medical officers. Men would obtain junior and senior staff appointments at the hospital for other than the excellent reason that their scientific work was the best available at the time of the vacancy; the medical profession would be unrepresented or powerless at the meetings of the governing body and would speedily find themselves unable to do their beneficent work without constant friction or submission to a position of complete subservience. Over and over again it has been demonstrated that medical work must suffer if all initiative is taken away from the medical profession, and that a hospital cannot be managed without the medical staff having a proper voice in the management. The honorary staff of a hospital under existing conditions obtain this voice; in their wards they are the main authorities, in the choice of their fellows they have much influence, and in the choice of their subordinates they have almost the power of nomination. A member of the honorary staff of a hospital feels his high and honourable responsibilities. He gives his services because he has those responsibilities and is repaid by public consideration. The public know of him that he has been chosen for his attainments and character by men of his own profession and that he is in more than a nominal sense a trustee for the conduct of a great charity. He owes it to the public, to his colleagues, and to himself to do his work without stint, and almost without exception he pays his debt. Would the public or the sick poor obtain services of the same quality if the medical staff of our hospitals were appointed by a municipal body, with all the liabilities of such bodies to political influences and social and private bias? No one who has thought about the matter can have a shadow of doubt what the answer must be.

Hospital abuse comprises under a brief title large questions, larger than have been recognised by many who have talked and written at length upon the matter. Hospital abuse is one expression of a desire on the part of the public to obtain medical assistance at the lowest possible price and it is as part of a general organised resistance to such tactics that the remedy must come. For the present the question has entered into a vicious circle and every step aggravates the difficulty. The workmen giving such large sums in the aggregate do not see that they are not contributing their just quota and are not really paying for service rendered. They give pence but think in terms of thousands of pounds. The more hospital abuse prevails the more disinclined will the well-to-do classes be to subscribe, for the knowledge is spread that the money of the charitable subscribers is being misapplied. The amount given decreases and this leads the managers of hospitals to rely more and more on the subscriptions of the working classes and to refrain from making inquiries when cases of abuse come before them. It is towards breaking this vicious circle that efforts should be directed. The agitation against hospital abuse has led to a few reforms here and there but such sporadic attempts at remedy do not meet the case. What is required is education of public opinion. The public should be helped to understand the fact that machinery to some extent really exists to deal with the whole situation only it is improperly used owing to the eccentric ignorance that prevails among all classes. An injured man or a sick woman turns at once to the nearest hospital for aid, the out-patient department becomes grossly crowded, and the real sufferers are thrust to the wall by applications for assistance justified neither by the plight of the patients nor by their circumstances. The public should be taught to regard the family practitioner as the first source of help, and where their means do not permit of their employing him in a private capacity they should avail themselves of provident dispensaries which are properly conducted and other legitimate forms of combination. The public and the general practitioner should alike regard the out-patient departments of hospitals as the poor man's consulting rooms and only such cases should be drafted to these departments as present difficulties in their treatment. Combination among the public has long been seen by the medical profession to be the solution of the problem of medical assistance for poor people; it is only unfair combination, leading to a necessary lowering of professional standards, to which objection is offered. In order that provident dispensaries may take the place of the out-patient departments of hospitals, as far as the necessitous sick are concerned, some increase in their number and some standardising of their methods are required, but if the genuine economy of a reasonable use of such institutions

[2] THE LANCET, Sept. 18th, 1897, p. 745.

were more widely perceived there would be no difficulty in these improvements. The exact place of the general practitioner's surgery, the provident dispensary, and the out-patient department in a general scheme for the treatment of the sick poor should be defined and understood; then, and perhaps then only, shall we begin to solve the problems of hospital abuse and to remedy the evils of immoral combination. When, in addition, the public perceive that the gift of pennies, even though systematically given and amounting in the aggregate to a large sum, does not confer a legal right to obtain the gratuitous services of the staff of the hospitals, and when, as a matter of course, there is an understanding between the local practitioners and the staff of the neighbouring hospitals, whereby the practitioners may feel assured that the hospitals will not wilfully take their poorer patients from them, two of the glaring grievances of the medical profession will rapidly abate.

(To be continued.)

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In 76 of the largest English towns 8920 births and 4740 deaths were registered during the week ending March 18th. The annual rate of mortality in these towns, which had been 15·7, 17·1, and 17·2 per 1000 in the three preceding weeks, declined again to 15·8 per 1000 last week. In London the death-rate was 15·6 per 1000, while it averaged 16·0 per 1000 in the 75 other large towns. The lowest death-rates in these towns were 3·9 in Bournemouth, 7·8 in Wal-all, 8·1 in Hornsey, 8·4 in Grimsby, 8·5 in Walthamstow, and 9·0 in King's Norton; while the highest rates were 22·3 in Rochdale, 22·7 in Southampton, 22·8 in Middlesbrough, 23·9 in Stockton-on-Tees, 25·1 in Barrow-in-Furness, and 27·4 in Portsmouth. The 4740 deaths in these towns last week included 430 which were referred to the principal infectious diseases, against 365, 486, and 471 in the three preceding weeks; of these 430 deaths, 181 resulted from measles, 108 from whooping-cough, 45 from diphtheria, 41 from diarrhœa, 36 from scarlet fever, 17 from "fever" (principally enteric), and two from small-pox. No death from any of these infectious diseases was registered last week in Walthamstow, Hastings, Bournemouth, Walsall, Handsworth (Staffs.), King's Norton, Coventry, Bury, or Huddersfield; while they caused the highest death-rates in Portsmouth, Southampton, West Bromwich, Nottingham, St. Helens, Middlesbrough, Stockton-on-Tees, and West Hartlepool. The greatest proportional mortality from measles occurred in Portsmouth, Southampton, West Bromwich, Leicester, Nottingham, St. Helens, Bolton, Sheffield, York, Middlesbrough, Stockton-on-Tees, and West Hartlepool; from whooping-cough in Willesden, Tottenham, and Preston; and from "fever" in West Bromwich. The mortality from scarlet fever, from diphtheria, and from diarrhœa showed no marked excess in any of the large towns. One fatal case of small-pox was registered in South Shields and one in Tynemouth, but none in any other of the 76 towns. The number of small-pox patients remaining under treatment in the Metropolitan Asylums Hospitals on Saturday, March 18th, was 33, against 15, 15, and 16 at the end of the three preceding weeks: nine new cases were admitted during the week, against seven, four, and three in the three preceding weeks. The number of scarlet fever patients in these hospitals and in the London Fever Hospital, which had been 1987, 2002, and 2036 at the end of the three preceding weeks, had further risen to 2042 at the end of last week; 262 new cases were admitted during the week, against 224, 290, and 303 in the three preceding weeks. The deaths in London referred to pneumonia and diseases of the respiratory system, which had been 335, 353, and 361 in the three preceding weeks, declined again to 304 last week, and were 71 below the number in the corresponding period of last year. The causes of 63, or 1·3 per cent., of the deaths in the 76 towns last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in Croydon, West Ham, Leeds, Hull, and in 42 other smaller towns; the largest proportions of uncertified deaths were registered in Ipswich, Birmingham, Coventry, Liverpool, St. Helens, Manchester, Sheffield, Sunderland, and Gateshead.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been 18·3, 17·4, and 18·6 per 1000 in the three preceding weeks, declined again to 18·2 per 1000 during the week ending March 18th, but was 2·4 per 1000 in excess of the mean rate during the same period in the 76 large English towns. The rates in the eight Scotch towns ranged from 11·5 in Leith and 12·2 in Paisley to 19·6 in Aberdeen and 22·3 in Greenock. The 610 deaths in these towns included 17 which were referred to whooping-cough, 13 to diarrhœa, ten to measles, eight to diphtheria, three to "fever," and one to scarlet fever, but not any to small-pox. In all, 52 deaths resulted from these principal infectious diseases last week, against 63, 60, and 58 in the three preceding weeks. These 52 deaths were equal to an annual rate of 1·6 per 1000, which was 0·2 per 1000 above the mean rate last week from the same diseases in the 76 large English towns. The fatal cases of whooping-cough, which had been 27, 27, and 31 in the three preceding weeks, declined again last week to 17, of which 13 occurred in Glasgow and two in Greenock. The deaths from diarrhœa, which had been 16 and 17 in the two preceding weeks, decreased to 13 last week and included five in Glasgow, four in Dundee, and three in Edinburgh. The fatal cases of measles, which had been seven, eight, and six in the three preceding weeks, increased again last week to ten, of which seven were registered in Glasgow and three in Edinburgh. The deaths from diphtheria, which had been, six, two, and three in the three preceding weeks, further rose to eight last week, and included four in Edinburgh, two in Glasgow, and two in Paisley. The fatal cases of "fever," which had been eight, four, and one in the three preceding weeks, rose again to three last week, and included one case of typhus in Aberdeen. The deaths referred to diseases of the respiratory organs in these towns, which had been 116, 114, and 153 in the three preceding weeks, declined again to 140 last week, and were 45 below the number in the corresponding period of last year. The causes of 14, or more than 2 per cent., of the deaths registered in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 25·5, 30·7, and 25·2 per 1000 in the three preceding weeks, further fell to 23 8 per 1000 during the week ending March 18th. During the past four weeks the death-rate has averaged 26·3 per 1000, the rates during the same period being 16·5 in London and 15·7 in Edinburgh. The 173 deaths of persons belonging to Dublin registered during the week under notice were 10 below the number in the preceding week, and included eight which were referred to the principal infectious diseases, against five, eight, and two in the three preceding weeks; of these, four resulted from measles, and one each from scarlet fever, from diphtheria, from "fever," and from diarrhœa, but not any from small-pox or from whooping-cough. These eight deaths were equal to an annual rate of 1·1 per 1000, the death-rates last week from the principal infectious diseases being 1·0 in London and 1·7 in Edinburgh. The fatal cases of measles, which had been three, three, and one in the three preceding weeks, rose again last week to four. The 173 deaths in Dublin last week included 26 of children under one year of age and 47 of persons aged 60 years and upwards; the deaths both of infants and of elderly persons showed a slight decline from the respective numbers recorded in the preceding week. Two inquest cases and two deaths from violence were registered; and 62, or more than a third, of the deaths occurred in public institutions. The causes of 11, or more than 6 per cent., of the deaths registered in Dublin last week were not certified.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Fleet Surgeons: R. Hardie to the *Egmont* and for Malta Dockyard; H. W. A. Burke to the *Commonwealth* on commissioning; E. B. Pickthorn to the *President*, for three months' hospital

course; R. T. A. Levinge to the *Montagu;* and J. F. Hall to the *President*, to be lent to R.N. Rendezvous temporarily. Surgeons: A. C. Bean to the *President*, for three months' hospital course; H. C. Ross to the *Commonwealth;* and L. Lindop to the *Ganges*.

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel C. White (retired), now re-employed at St. John's Wood Barracks, will revert to retired pay in May and until then has been granted sick leave. Lieutenant G. S. C. Hayes and Lieutenant C. Bowle have left for a tour of duty in India. Lieutenant-Colonel J. M. Reid has been appointed Medical Inspector of Recruits on the staff of the Southern Command and has been posted to the Administration Headquarters, Radnor House, Salisbury. Lieutenant-Colonel H. Scott (retired), A.M.S., has been transferred from Yarmouth to London for duty in connexion with the recruiting staff. Major M. L. Hearn has been appointed Senior Medical Officer, North China.

IMPERIAL YEOMANRY.

Montgomeryshire: Surgeon-Captain F. E. Marston resigns his commission (dated March 18th, 1905).

VOLUNTEER CORPS.

The Electrical Engineers (Volunteers): Surgeon-Lieutenant C. H. Leaf to be Surgeon-Captain (dated Feb. 28th, 1905).

Rifle: 1st Volunteer Battalion the Queen's (Royal West Surrey Regiment): Surgeon-Captain R. J. Swan, from the 1st Surrey (South London) Volunteer Rifle Corps, to be Surgeon-Captain (dated March 18th, 1905). 1st Volunteer Battalion the Suffolk Regiment: Supernumerary Surgeon-Major G. S. Elliston (Brigade-Surgeon-Lieutenant-Colonel, Senior Medical Officer, Harwich Volunteer Infantry Brigade) to be Surgeon-Lieutenant-Colonel and to remain seconded (dated March 18th, 1905). 4th (Nottinghamshire) Volunteer Battalion the Sherwood Foresters (Nottinghamshire and Derbyshire Regiment): Supernumerary Surgeon-Major F. H. Appleby (Brigade-Surgeon-Lieutenant-Colonel, Senior Medical Officer, Sherwood Foresters Volunteer Infantry Brigade) to be Surgeon-Lieutenant-Colonel and to remain Supernumerary (dated March 18th, 1905).

THE ROYAL NAVAL COLLEGE, OSBORNE.

The Medical Consultative Board of the Admiralty, consisting of Mr. G. H. Makins, C.B., Dr. W. H. Allchin, and Dr. H. D. Rolleston, accompanied by Mr. J. H. Fisher, has visited Osborne College to report upon the existence of a mild form of conjunctivitis which has been prevalent among the boys. The Director-General of the Royal Navy Medical Service was also present and it is gratifying to know that the conjoint report in regard to the sanitary state of the College was highly satisfactory.

COLOUR BLINDNESS AND THE ARMY AUTHORITIES.

According to a recent ruling of the War Office which has appeared in the press it seems that colour blindness will no longer be a bar to a candidate seeking a commission in His Majesty's army. Previously to the promulgation of this order the reverse was the case. Colour blindness was regarded as a disqualification and those who could not pass the requisite colour tests failed at the required medical examination. It seemed but reasonable to suppose that the War Office authorities knew what they were about and that colour blindness might have been found to interfere with an officer's duties on field service, in the matter of signalling, for example; but whether it did or did not or was likely to have that effect was a point which should obviously have been settled in the first instance and before any order on the subject was issued. As it is, a number of army candidates have been rejected by medical boards in the past who need not have been had the present ruling been in force, whereat the rejected candidates and their parents and guardians naturally feel aggrieved and complain.

RECRUITING IN GERMANY IN 1903.

An abstract of the report on recruiting for the German army in 1903, which was presented to the Reichstag on Nov. 20th last, appears in the *Archives de Médecine et de Pharmacie Militaires* for the current month. The total number of young men whose names were inscribed on the lists for examination by the various recruiting boards throughout the country during the year 1903 was 1,072,819. Of these, 125,000 either refused to appear or could not be found, 1167 were excluded, 41,828 were discharged, 478,164 were sent back subject to re-examination in the following year, 28,769 had already entered either the army or the navy as volunteers, while 397,891 were accepted as fit for service. The distribution of the latter was as follows: Landsturm, 98,992; army reserve, 82,786; navy reserve, 1329; active army, combatants 203,913, non-combatants 3670; active navy, combatants 4337, non-combatants 2864. The total number of volunteers during 1903 was as follows: army, 49,226; navy, 3381. Education in Germany has advanced of late years. Twenty years ago 2·03 per cent. of the recruits were illiterate; in 1903 the general percentage was only 0·05. Western Prussia furnished the highest percentage (0·25), next to it came Eastern Prussia (0·16), then Posen and Brandenburg (0·03), while in Pomerania the percentage of youths unable to read and to write was no more than 0·01.

THE WAR IN THE FAR EAST.

There is a comparative lull in the fighting in the Far East at the present time with practically no news from Manchuria. There are signs of exhaustion on both sides and time is required to get up the necessary supplies and remove the sick and wounded towards their respective bases. The pursuit of the Russian army to Harbin nevertheless continues but it seems doubtful whether the Japanese can pass their enemy on the way there. All the accounts that have been published descriptive of the occurrences that followed the evacuation of Mukden agree in the breakdown of the Russian medical and hospital arrangements and the consequent terrible sufferings of the sick and wounded, to say nothing of those who were starving and exposed to cold owing to the inadequacy of the commissariat and transport to cope with the stress and strain of the situation. The inevitable congestion, too, on the Siberian line has of late become terrible and the supply difficulty must be an ever-increasing one for the Russian forces in the field.

M. V. D. Bidrin, the manager of the Moscow Red Cross contingent at the seat of war, has telegraphed to his committee that in obedience to a special request he had detached an operating wagon and sent it to the extreme limit of the railway near Fushun. During six days as many as 60 operations that could not be delayed were performed in it. The detachment, consisting of the lady doctor Gedroitz and the sisters of mercy Bikovoi, Ponomarevoi, Zacharovoi, and Rosenplater, worked for 20 hours out of the 24 and refused to leave in spite of his warning that they might be cut off. All remained till the last moment.

THE WOUNDS INFLICTED BY THE JAPANESE SMALL-BORE RIFLES.

In a late number of the *Vratch* Dr. J. Seldowicz gives an interesting account of his experience while acting as surgeon in chief of No. 10 hospital at Tieling in Manchuria. His observations with reference to the injuries inflicted by the Japanese small-bore rifles confirm the deductions in favour of conservative surgery in such cases which were drawn during the South African war. His hospital was sufficiently close to the field of battle to admit of the reception of the wounded soldiers while they were still retaining the dressings that had been applied at first-aid stations. On June 4th last a train reached No. 10 hospital at six o'clock in the morning containing 150 men who were wounded on June 2nd in an engagement at Wafankoo. They had been compelled to find their way as best they could on foot for between 20 and 30 kilometres and had then to support a journey by rail of nearly 300 more. In spite of this and notwithstanding the fact that many among them had penetrating wounds of the thorax and of the abdomen, their general condition was excellent. At first sight it seemed as though they were merely slightly injured. On further examination operative interference was found to be necessary in five cases only. Four men with projectiles superficially lodged were relieved of them under cocaine, while the fifth had a crushed finger amputated. Penetrating wounds of the thorax were treated simply by antiseptic dressing, with rest and the internal administration of codeine. In some instances it was clear that the lung was implicated but the patients nevertheless did well and ultimately recovered perfectly. Dr. Seldowicz consequently feels disposed to classify penetrating gunshot wounds of the thorax among favourable injuries. In three cases where the pelvis was entered a similar conservative course of treatment was adopted with equal success, although in one of them the cavity of the abdomen had also been entered by the projectile. Wounds of the buccal region did well likewise under

simple antiseptic measures, notwithstanding the proneness to suppuration so often seen when the mouth has been injured. Several of the invalids had joints more or less shattered by bullets but all recovered with useful limbs. Finally, Dr. Seldowicz comes to the conclusion that the projectile of the Japanese small-bore rifle may be classified as a "humanitarian" projectile, the effects it produces in the human organism being generally unattended by grave disorder.

RUSSIAN MEDICO-POLITICAL MANIFESTO.

On March 8th at the close of a sitting of the St. Petersburg Society of Hospital Doctors (called to consider the threatened invasion of cholera), which was numerously attended, the society carried a threefold motion setting forth that only a united society could hope to cope successfully with the expected invasion of cholera; but that the present conditions paralyse united action and make it impossible to arrest the scourge or to limit the number of its victims; that serious consequences of such a visitation are only to be feared on account of distrust in society which cannot be removed because of the limitations to which the press is subjected and of the absence of freedom of speech; and that more dreadful and extensive cholera riots may occur than in 1892 and that the most important immediate question is the introduction of radical reform.

It is notified that the promotion of an officer of the Indian Medical Service to the rank of major may be accelerated if he produces, while in the rank of Captain, satisfactory evidence of progress in any branch of knowledge which is likely to increase his efficiency, such as obtaining a higher degree or a special qualification of repute, or by furnishing proof of having pursued with diligence and advantage serious study of an approved subject. The period of acceleration that may be granted is fixed at six months provisionally.

It has been decided that the London Military District shall be provided with a completely equipped bearer company and field hospital for training all ranks of the Royal Army Medical Corps in field duties.

Correspondence.

"Audi alteram partem."

APPARENT RECOVERY FROM PRESUMABLY MALIGNANT DISEASE OF THE MOUTH.

To the Editors of THE LANCET.

SIRS,—I have read with interest the case of malignant disease of the mouth reported by Dr. W. Gordon of Exeter in THE LANCET of March 18th, p. 713, having seen a case of apparent epithelioma of the tongue in my practice last year which disappeared entirely and the patient died subsequently from other causes. Unfortunately, as in Dr. Gordon's case, I was unable to have a portion of the growth submitted to microscopical examination.

The following brief notes of the case may be of interest. It occurred in a lady, aged 98 years, totally blind from cataract, toothless, and bed-ridden for the past six years. The beginning of June last year she complained of sore throat, the fauces were very red and swollen, as was also the tongue. She complained of difficulty in swallowing, which caused her much pain, the pain shooting into the ears, especially into the left ear. There was no enlargement to be found of the submaxillary or cervical glands. A small ulcer appeared on the side of the middle third of the tongue on the left side about three millimetres in diameter. I was from home the last fortnight in June until the end of the first week in July and on my return found a ragged ulcer, two-thirds of an inch in extent and a quarter of an inch deep, on the site of the previous small ulcer, with hard cartilaginous borders, the outer border being especially raised and hard. My locumtenent and I diagnosed the growth to be malignant and this opinion was confirmed by one of the leading Birmingham surgeons who pronounced it as a case of epithelioma and, taking into consideration the age of the patient, agreed that operative interference would not be advisable. The only treatment adopted was boric acid mouth washes and painting over the painful parts with 5 per cent. of glycerine of cocaine, which gave great relief. To make a long story short, the growth gradually disappeared and all the painful symptoms subsided, the tongue and throat being normal by the beginning of November. The patient subsequently died at the end of December from general failure.

The question naturally arises, Is it possible that well-marked cancer may disappear spontaneously in some cases irrespective of so-called specific or other methods of treatment? and if so, Are there other authenticated cases on record?—questions which might well be answered by those who have special experience in cases of this nature.

I am, Sirs, yours faithfully,

FRANCIS WM. JOSHUA.

Great Malvern, March 20th, 1905.

EXCESSIVE URIC ACID AS A CAUSE OF MIGRAINE.

To the Editors of THE LANCET.

SIRS,—I have read with great interest a paper by Dr. W. A. Turner on the Nature and Treatment of Epilepsy in THE LANCET of March 18th but would crave a few lines to point out that he is not quite correct with regard to some of the facts as known to me and that in a paragraph near the end of his paper he comes within measurable distance of contradicting himself. On p. 710 he says: "Haig suggested that there was a definite relation between excess of uric acid in the blood and such maladies as migraine and epilepsy, but treatment directed upon this theory has not proved of greater value than other methods of treatment conducted along conventional lines."

With regard to migraine I think that in my experience over the last 10 or 15 years, and in somewhere between 500 and 1000 cases, I should not be over the mark if I said that in all who carried out the treatment correctly for a sufficient length of time the successes amounted to 75 per cent.; in fact, I only know of as many cases as I could count on the fingers of one hand where diet treatment has failed and these, I believe, merely require further investigation to demonstrate the cause of its failure. Then it has been acknowledged by others that abstinence from meat cures migraine.[1] With regard to epilepsy I have had far less experience, but here again among cases which come under treatment in the early years of their trouble quite a large percentage have been completely cured, and of those that come at various later periods many greatly improve, so that both in the diminution of the frequency and severity of the attacks and in the power to dispense altogether with bromides the good results have practically paralleled very closely those with migraine.

On p. 711 Dr. Turner says: "The dietary which has been found most serviceable consists of milk, fresh butter, eggs, fruit, vegetables, and bread, all salt being as far as possible eliminated." I should like to point out that with the single exception of eggs (of these I generally allow the white, or even the whole egg if it is absolutely fresh) this is exactly the diet that I have for years been advocating and I should thoroughly agree with him as to the elimination of salt from the food. It is my constant practice to leave it out not only in migraine and epilepsy but in all uric acid troubles and in many of those who live on my diet the desire for salt more or less quickly disappears.

I am, Sirs, yours faithfully,

Brook-street, W., March 20th, 1905. ALEXANDER HAIG.

THE CLASSIFICATION OF INSANITY.

To the Editors of THE LANCET.

SIRS,—To follow Dr. Goodall through his very detailed criticism of the articles on kinds of insanity, &c., that I have been contributing to the *Journal of Mental Science*, would occupy an amount of your space that I can scarcely expect you to place at my disposal, even if it were worth while. Dr. Goodall sets himself to prove that I am inconsistent. By taking a few words here from an author's one book, and a few words there from his other; by separating the passages from their context and contrasting them, it is not difficult to show that a writer is inconsistent. The only

[1] See, for instance, Dr. W. P. Herringham, St. Bartholomew's Hospital Journal, 1897, vol. i., p. 99.

writer I know, who is likely to come consistent through such a trial, is Euclid. And when it is done, what is achieved? The writer is shown to be inconsistent. But perhaps he considers consistency a virtue of low rank in comparison with candour. Perhaps he thinks that it shows less courage and less honesty to maintain with obstinacy an opinion once expressed, than frankly to admit that he has been mistaken. Dr. Goodall contrasts bits of the classification proposed in my articles with bits of the classification formerly proposed in my text-book, and shows that the two are inconsistent. Sirs, they are inconsistent. Dr. Goodall omits to mention that, in these articles, I have myself subjected my own previous classification to destructive criticism, and discarded it. It is not wonderful if the two classifications disagree. Further, criticism directed against my second classification, and making no reference to the purpose of the classification, is misdirected. The articles dealt with certain statistical tables. The classification was made to fit these tables. Things are excluded from the classification, not because they are necessarily inappropriate to some classification, but because they appear in others of the tables criticised, and are therefore redundant in this classification; or because they do not admit of trustworthy statistical treatment. In short, the classification is offered *secundum quid*, and Dr. Goodall treats it as if it had been offered *simpliciter*, a device of notorious fallacy. Dr. Goodall sneers at my statement that "often, but by no means always, there is a septic element in the case" of insanity connected with the puerperium, and implies that I ought to have given exact figures. As he appears to have read my articles, he might have gathered from them that I have no great confidence in the statistics hitherto collected; and one of the sets of figures, given by him in reproof of my inexactness, is worthless on the face of it. He contrasts the "full and orderly" description of senile insanity, given by Weygandt, with my "attenuated" description of the same. My text-book was avowedly written, not for psychiatric experts, but to give to students of general medicine a succinct account of insanity. In such a book a "full" description would be out of place. If Dr. Goodall intended to imply that my "attenuated" description is also disorderly, it would have been more candid to say so, and to point out the disorder. In the pursuit of science, little is gained, I think, by epithetical criticism.

I am, Sirs, yours faithfully,

March 18th, 1905. CHAS. MERCIER.

TO MEDICAL FREEMASONS.

To the Editors of THE LANCET.

SIRS,—May I through the medium of your widely read columns appeal to medical men, and more especially to medical Freemasons, who are subscribers to the different Masonic charitable institutions for their votes and influence on behalf of the candidates whose names are given below and who are up for the next elections in April and May? The response to similar appeals in THE LANCET in the past has been so liberal as to lead us to hope that all the candidates may be successful. The votes so collected should reach such numbers as to insure this complete success and by organisation alone can such a result be obtained. It is with the object of thus organising the collection and distribution of votes that this appeal is made by the St. Luke's Medical Lodge of Instruction and is supported by the London Hospital Lodges' Joint Committee. Certainly the candidates have especial claims upon medical Freemasons and any votes on their behalf will be gratefully received by our treasurer, Dr. J. Eyre, Wandle House, Wandle-road, S.W., or by myself.

Royal Masonic Institution for Girls (election on April 13th).—Eileen Torrens, daughter of the late James Torrens, M.D., M.Ch., of Bridgnorth, Salop; and Mary Trevor Webster, daughter of the late Trevor Webster of Bawdley, Worcestershire.

Royal Masonic Institution for Boys (election on April 14th).—Alfred Montague Burns, son of the late Alfred Hugh Burns, L.R.C.P. Irel., L.S.A., of Margate; Charles Robert Hughes, son of the late David Arthur Hughes, M.R.C.S., L.R.C.P., D.P.H., of Barmouth, N. Wales; and Cyril Ernest Hockley, son of the late Edward Robert Hockley, surgeon dentist, of Northfleet, Kent.

Royal Masonic Benevolent Institution for Aged Freemasons and Widows of Freemasons (election on May 19th).—Joseph Rickets, L.R.C.P., L.M. Edin., L.F.P.S. and L.M. Glasg., of 8, Hornby-avenue, Bootle; Elinor Gartley, widow of the late John Alexander Gartley, dental surgeon, of Gloucester-road, Kew.—I am, Sirs, yours faithfully,

HAROLD S. SINGTON,
Secretary, St. Luke's Medical Lodge of Instruction.

44, St. Mary's Mansions, W., March 14th, 1905.

PERITONITIS: A BACTERIOLOGICAL STUDY.

To the Editors of THE LANCET.

SIRS,—In view of the interesting results obtained by Mr. L. S. Dudgeon and Mr. P. W. G. Sargent in their bacteriological study of peritonitis I feel disposed to ask a question of them. Do they regard their results as disproving the possibility of an appendicitis due to the bacillus influenzæ? Several clinicians have attempted to classify some cases of appendicitis (or perityphlitis) as of influenzal origin, and have suggested that such may in part account for the alleged increased prevalence of the complaint. In this connexion a discussion at the Académie de Médecine on July 5th, 1904,[1] is of interest, as is also an observation by Mr. H. C. Allinson of King's Lynn on a case of extreme congestion in the cæcal region which he considered to be of influenzal origin.[2]

Perhaps the cases examined by Mr. Dudgeon and Mr. Sargent were not such as might even have been suspected to be of influenzal origin. Perhaps the cultural methods adopted were not such as would favour the growth of the bacillus if present. But some of us must have notes of cases which make us unwilling to give up the theory that as the influenza bacillus may cause severe gastric symptoms, so it may at times cause an appendicitis.

I am, Sirs, yours faithfully,

A. CHRISTIE REID, M.B., Ch.B. Aberd.

Thurnscoe, near Rotherham, March 14th, 1905.

THE REMISSION OF INCOME TAX ON INSURANCE PREMIUMS.

To the Editors of THE LANCET

SIRS,—In THE LANCET of March 11th, p. 663, there appears an article entitled "Hints on Income Tax Assessment," in the course of which your contributor mentions the deduction of income tax from insurance premiums. I beg leave to call your attention to the following sentences which occur in his paragraph on this subject. "It is important to notice in this connexion that it is only premiums paid to an English insurance company or to an approved colonial company which may be deducted. Thus a premium paid to an American or other foreign company would not be allowed for."

This statement is, unfortunately, misleading, although absolutely correct as far as the Inland Revenue authorities are concerned. The British Government, for reasons best known to itself, chooses to remit the income tax only on home and colonial office premiums. But I am sure that in fairness you would wish to complete the information you have given by letting your readers know that my own company, the Mutual Life Insurance Company of New York, offers the same benefits and grants the same privileges as regards income tax to its policy-holders as they would receive if insured in a purely British company. I am well aware that the recovery of income tax is an important consideration to many people when taking out insurance policies and it is for this reason that I take the opportunity of correcting a statement which is apt to create a totally wrong impression in the minds of your readers as regards the Mutual Life Insurance Company of New York.

I am, Sirs, your faithfully,

D. C. HALDEMAN,
General Manager.

March 18th, 1905.

*** We publish Mr. Haldeman's letter but he is not justified in calling our remarks "misleading." A company, by private arrangement with its clients, may place those clients in any position that it likes. The general regulations of the Inland Revenue authorities remain as we quoted them but there is nothing to prevent a company from contracting itself outside the regulations.—ED. L.

[1] See THE LANCET, July 23rd, 1904, p. 257.
[2] Brit. Med. Jour., July, 1903.

THE MEDICAL CONTROL OF SCHOOLS AT NEW YORK.

(FROM OUR SPECIAL SANITARY COMMISSIONER.)

IN spite of the ever-increasing influx of immigrants and the consequent crowding and overcrowding the city of New York can boast of a decreasing death-rate. Of course, many causes contribute to bring about this happy result. It is, however, quite safe to say that of the various measures taken the most recent and probably the most successful are those which have for their object the prevention of schools becoming centres of infection and of contagion. In England the President of the Board of Education has appointed, with the concurrence of the President of the Local Government Board, an inter-departmental committee not only to inquire into the feeding of school children but also "to ascertain and report on what is now being done, and with what result, in respect of medical inspection of children in public elementary schools." In these circumstances the experience acquired at New York on almost identically the same lines is likely to prove of use and of interest. The elaborate series of precautions now enforced at New York were not devised in a day. As is usually the case in such matters they were slowly evolved and extended as experience proved the need of each successive development. It was in March, 1897, that the medical supervision of the schools of the city of New York was placed under the control of the department of health. This is the equivalent to placing the sanitary control of schools in England under the medical officer of health and the health committee of the borough or town council. In October, 1896, the New York sanitary authorities caused an investigation to be made and a report to be presented on the influence exercised by schools in the spread of epidemics. The homes of the children absent from school were visited. It was then ascertained that many of these absentees were suffering from infectious or contagious diseases. There was also and not infrequently good cause to suspect that the complaint had been caught while attending school, particularly as other members of the same household were found to be at school in spite of the sickness which prevailed in their homes. In some cases of diphtheria a child would return to school as soon as the more acute symptoms had disappeared. Some of these children were traced to school and a culture was taken from the throats of those who had returned to school because they were suffering only from slight sore-throat. Bacteriological examination clearly revealed the presence of the Klebs-Löffler bacilli. The same danger occurred in regard to scarlet fever and, with the inquisitiveness of children, it was found that the peeling from the hand had been passed round a class-room for inspection.

The report containing these and many other conclusive facts was submitted by the board of health to the board of estimate, or presumably what would be called in England the finance committee of the county or borough council. The finance authority with commendable promptitude voted a subsidy sufficient to pay 150 inspectors at a salary of £6 per month. These inspectors had one or two schools to visit each school day at about 9.30 A.M. As the children arrive at the school the teachers stop and send to an office any child whom they suspect of being unwell. The children thus detained do not enter the class-room but are kept in a sort of quarantine till the arrival of the inspector. The schools are all connected by telephone with the central offices of the department of health. The school inspector on examining the children detained by the school teachers is thus able to telephone to headquarters, so that a physician may be sent at once if there seems to be a case of contagious disease. If the suspicions first of the school teacher and then of the inspector are confirmed by a medical officer sent by the department of health the authorities of the school are duly informed so that they may exclude all members of the patient's family and inspectors visit the child's home to see that the patient is properly isolated. A district sanitary inspector then takes over the charge of the case which he has to visit at least once a week. The sanitary inspector shows the family how they are to isolate the patient and pastes a notice on the door of the apartment warning all who may be about to enter as to the nature of the contagion within. Further, it is the duty of the inspector to call on all the other tenants living in the same building and to inform them of the presence of contagious disease and which are the family and the tenement to be avoided. When the patient sleeps at the back and close to a shop or place of business the patient must be removed to the hospital or the business closed. In either case the premises must be fumigated before business is resumed. When the patient is sent to the hospital then the other children may go to school after the disinfection of their home. But such regulations would be set aside by many thoughtless or ignorant people if there were no stringent means of enforcement. At New York, if the patient is allowed to leave the room where he is isolated or the shop is opened for business, or if the notice is removed from the door, a police officer—and there is a special corps of policemen known as the health squad reserved for such purposes—is appointed to watch over the case. He puts up another notice which has an addendum to the effect that the patient will be forcibly removed if there is any further infringement of regulations. This seems a rather mild proceeding. In England wilful exposure of infected persons may be punished by a fine not exceeding £5 and imprisonment not exceeding three months. Yet it is stated that forcible removal of such cases to a hospital is not a frequent occurrence at New York.

If the school inspector suspects the presence of diphtheria he has with him all that is necessary and at once takes a swab from the throat or nose. On a blank form, likewise ready to hand, he inscribes: (1) the number of the swab, whether it is the first, second, or third specimen taken; (2) the school number; (3) the date on which the swab was taken; (4) the name of the child; (5) the address of the child; (6) whether exudate is present in the throat; (7) how long sick; and (8) the address, the name, and the telephone number of the school inspector. The child is, of course, excluded from school till the answer has been received from the bacteriological laboratory. The specimens are taken in the morning and therefore are in the hands of the bacteriologists by 2 P.M., when the examination commences. There are two culture slips. Each is affixed to a separate tube and kept in an incubator all night. The next morning they are examined and according to the result marked "L. present," or "No L.," or "Doubtful, another culture required." In the latter case, of course, the pupil is not allowed to return to school till the further examination is completed. Formerly all such protective measures depended on the acuity of the school teachers and they rendered great service but had not the necessary authority to exclude doubtful cases. Now, on the contrary, the medical inspectors very rigorously exclude these doubtful cases. Also carefully prepared lists are sent every day to every school so that the teachers may see at a glance all cases reported to the department of health and find if any are likely to attend their schools. If a child from an infected home is present the fact is thus at once detected and the child is immediately sent away. In this manner the children have been to a large extent protected from contact with such diseases as measles, diphtheria, scarlet fever, and so forth. Under this system and during the school year, September, 1901, to June, 1902, consisting of 194 school days, 47,679 visits were paid to 266 schools, with an average attendance of 260,182 pupils. Of these 87,730 were examined and 9703 were excluded from the schools. The diseases and complaints reported were as follows: measles, 85 cases; diphtheria, 94; scarlet fever, 34; whooping-cough, 174; miscellaneous, 526; contagious eye disease, 3470; pediculosis of the head and body, 4125; chicken-pox, 354; and skin diseases, 841. The miscellaneous group includes croup, tonsillitis, and mumps.

The great defect of this system is that the first and most difficult diagnosis depends upon the perspicacity of the school teacher. It is the correctness of the earliest diagnosis which alone can save the school from the danger of infection and yet it would be manifestly unfair to blame a school teacher if he failed to detect early symptoms. Therefore a better organisation was planned and put into operation in September, 1902. Inspectors were appointed, approximately one inspector for every 5000 children. If the distance between the schools is greater than usual then a smaller number of children are assigned to the inspector of such a district. Each inspector has to visit all his schools before 10 A.M. He then has to examine all children isolated by the teacher for fear that they may be sickening with some contagious disease. He must further examine all children who have been absent from school for a

few days and all children excluded from school attendance. When this is terminated the inspector proceeds with his periodic inspection of all the children. This inspection is carried forward under certain fixed regulations. The inspector must on entering a class-room place himself with his back to a window. The children then march past him in single file. On no account must he touch any of the children. The children are taught to pull down their own eyelids and to open their mouths wide. If there is anything suspicious the children are sent to the office, where they are subsequently and thoroughly examined. Thus there are two sorts of examination, first, that of the children who are suspected of being ill and consequently have not been allowed to enter the class-room; and secondly, that of the children who are believed to be in good health and who are in the class-room. The latter are not inspected every day. The inspectors visit each day different class-rooms and so divide this work as to be able to see every apparently healthy child about once a week. When there are any signs of measles, scarlet fever, diphtheria, small-pox, varicella, whooping-cough, rötheln, mumps, or acute catarrhal affections of the eyes, nose, and throat, the pupil is given an exclusion card on which are inscribed his name, age, residence, and the number and address of his school. This card is placed in a special envelope provided by the department of health and sealed. With this the child is sent home and no one but the parents or the guardians of the pupil has the right to open the envelope. In cases of measles and scarlet fever the school inspector telephones to the central office of the department and a medical officer is despatched by the sanitary authority to confirm or otherwise the school inspector's diagnosis and thus to justify the subsequent rigorous measures which have to be enforced and which have been described above. The inspector must also visit at their own homes all children who have been absent for a few days from school for no known and sufficient reason. By this means a great number of unreported cases of contagious disease are discovered. Thus by visiting absentees from Nov. 2nd, 1903, to May 12th, 1904, no less than 561 cases of measles and 107 of German measles were discovered, together with 70 cases of scarlet fever, 61 of chicken-pox, 19 of diphtheria, 25 of whooping-cough, 24 of mumps, two of pneumonia, and three of typhoid fever.

While the school inspectors thus penetrate into the homes of absentee pupils and often make useful discoveries, other inspectors not connected with the schools, such as the tenement house inspectors, also report any case of contagious disease which they may encounter to the department of health which in its turn warns the school authorities. In this manner many more cases have been reported, so that, judged by the statistical results, it would seem as if there had been a considerable increase in sickness. But as the death-rate does not increase in proportion it may safely be inferred that there has only been increased efficiency in notifying cases and not in the actual number of cases. Of the enormous amount of work done the following figures give an idea. For the school year 1902-03 there were 188 days during which a daily average of 287,592 pupils attended 263 schools. These schools were visited 62,298 times, the pupils were examined 6,236,336 times, and 41,826 were excluded in consequence of ill health. The diseases for which these children were excluded were 510 suspected cases of diphtheria of which 416 proved to be true cases. There were 45 cases of suspected scarlet fever of which 22 were genuine. Measles gave 94 true out of 168 suspected cases and varicella 528 out of 673 pupils excluded. Then there were 201 cases of pertussis, 4728 miscellaneous cases, 8678 cases of pediculosis, 25,264 cases of contagious eye diseases, and 1561 of contagious skin diseases.

Perhaps one of the greatest practical difficulties is the presence of vermin. Thus the very complete and able report of the New York city department of health on the question of the schools states that on the first day at the beginning of the year for which the figures have just been given no less than 1886 children were sent away for pediculosis. This, it is pointed out, caused the greatest indignation among the parents. Those parents whose children had been excluded were angry and those whose children had not been excluded were still more angry, so that everybody was discontented. The majority of the parents were indignant that their children should be brought into contact with other children whose heads were not clean. So great was the clamour that the authorities started an investigation in order to ascertain what precautions were taken to separate the children's outer garments. It was found that the accommodation provided was far from satisfactory. The ideal would be a separate wardrobe locker for each child and in default it was suggested that it would be better for each pupil to put his overcoat on a shelf under his desk than to hang it up promiscuously on pegs with other children's clothing. As a result of the publicity given to this question some improvements are taking place. Then the prevalence of contagious diseases of the eye led to inquiries as to the methods employed for keeping free from infection the pens, pencils, and drawing materials used by the pupils. Each school inspector received the following form which he was requested to fill up: "School number. Number of classes in school. Number of classes using envelopes. Number of classes using antiseptic pencil-holders. Number of classes using individual boxes or bags. Number of classes in which each pupil has his or her own pencil; no collection or distribution at all. Number of classes in which pencils are marked for identification but collected in a common box. Number of classes in which pencils are collected and distributed indiscriminately each day." The information obtained in response to these questions was not encouraging. The majority of the principals and the teachers had never thought of these questions at all. They had not displayed any concern as to the care of pencils, &c., from the sanitary point of view. But there were some teachers who used in their own classes modern contrivances for keeping separately each child's writing materials. For this purpose the department of health recommends the use of a large manilla envelope. The child's name can be written on the outside. These envelopes are distributed to their owners at the beginning of the class and the pencils, &c., are placed inside after the class is over. When this is done and the envelopes are fastened with a clasp they can be collected and stored away. But it is preferable for each child to have a drawer in his desk and to place the envelope in that drawer. In consequence of the report which had been drawn up when the inspectors had filled in the form quoted above the Board of Education purchased a large quantity of manilla envelopes, distributed them to the teachers, and called upon them to see that the pupils' pens and pencils were kept inside these envelopes and not mixed together. As for the school books, those that have been used by children suffering from contagious disease must all be destroyed. Thus much greater care is now taken to prevent school materials, books, pencils, &c., becoming vehicles for the transmission of disease.

(To be continued.)

BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

The Hospitals: Annual Reports.

THE 125th annual report of the General Hospital was presented to the governors on Wednesday last. An adverse balance of £1297 on the year's working was reported despite the fact that, through the generosity of Sir John Holder who has provided a laundry at Erdington, the annual expenditure on washing has been considerably curtailed. The deficit was attributed to a falling off in the subscriptions and to the new method of distributing the Hospital Sunday Fund. Formerly the hospital received every third year the whole sum subscribed during that year; now the hospital receives a definite proportion of each year's total, an arrangement by which it is the loser. Dr. E. Rickards was warmly thanked for his valuable services, extending over a period of 30 years, and he was elected an honorary consulting physician. The endowment of three beds during the year in memory of deceased friends was remarked upon with satisfaction and gratitude and a hope was expressed that so excellent a method of commemoration would find numerous imitators. The report contained the interesting statement that only four hospitals in the whole of the United Kingdom treated a larger number of out-patients annually. This was explained as due to the fact that the staff of the hospital was frequently called upon to attend to trivial injuries and to patients who could well afford to call in medical practitioners. At the Queen's Hospital a more satisfactory condition of affairs obtained, for while the work in both the in-patient and the out-patient departments had increased the subscriptions had also increased. On account of the great pressure put upon the accommodation by the

large number of patients it was felt that some extension of the premises must be made and with that in view the committee of management has secured certain adjoining property. The appointment of Mr. Priestley Smith as honorary consulting ophthalmic surgeon was confirmed and warm testimony was borne to his valuable services during the long period he has been connected with the institution. The Moseley Hall Convalescent Hospital at its annual meeting reported an increase in the amount of work and in the subscriptions, although the latter are still inadequate to meet the expenditure, the adverse balance on the year being £259. At the meeting a desire was expressed that shelters in the grounds should be erected for tuberculous patients. In each of the above annual reports it was suggested that the inhabitants of the neighbouring towns who benefited largely by the charities might subscribe more generously than they do at present.

The Birmingham Hospital Saturday Fund.

The executive committee of the Birmingham Hospital Saturday Fund was able to report at its annual meeting that a larger sum had been subscribed during the last year than ever before in the history of the fund; the sum raised was £18,643. There was a balance of over £1000 on the year's work. In addition to giving £10,000 yearly to the various Birmingham medical charities this excellent fund supports three convalescent homes at which no less than 2591 men, women, and children have resided during the year. To clear off a debt of £10,000 on one of the homes the committee has promoted an exhibition of the industrial arts of Birmingham by means of which it hopes to raise a substantial sum.

The Adjourned Licensing Sessions.

In a former letter it was stated that the members of the licensing committee had decided to "report" 36 houses in Birmingham as possessed of licences which might with advantage to the city be removed. At a later and final meeting this number has been reduced to 27, 16 of which are in the Floodgate-street area, where it is stated there is at present one licensed house to every 112 persons. Of the nine licences which it was decided not to proceed against two have already been surrendered and the objections to the others were withdrawn. In deciding which to "report" attention was paid to the number in the neighbourhood and to the reputation and sanitary condition of the houses. Whether all the 27 houses will have their licences removed or not depends now upon the amount of compensation to be paid and on the size of the fund

The Birmingham Board of Guardians.

In order to remove pauper children from workhouse associations and also to relieve the pressure upon the accommodation the board of guardians has been recommended by a committee which has had the subject under consideration to purchase a site for the accommodation of those children particularly whose parents are known as "ins-and-outs" from the frequent periodic visits which they make to the workhouse. In connexion with the projected labour colony for Birmingham a deputation from the Birmingham, Aston, and King's Norton unions is to pay a visit of inspection to the colony at Poplar.

The Treatment of Sewage at Wednesbury.

A new system of filtration has been instituted at the sewage farm belonging to Wednesbury. The filter is made of coal, has a superficial area of 500 square yards, and is capable of dealing with 75,000 gallons per day. According to Dr. A. Bostock Hill the percentage of purification effected is probably as high as at any works under similar conditions in the country. It is stated that fish turned into the effluent are thriving in it.

The Health Committee and "Humanised" Milk.

Reverting to the proposed supply of "humanised" milk in Birmingham the authorities, although impressed by the advantage of the scheme carried out by the Liverpool corporation, are of opinion that it will involve too great an expenditure of public money. They have been unable to come to any arrangement with the local milk vendors who consider that at the price at which the milk must be sold the profit would be insufficient. The further consideration of the subject has been deferred.

The Health of Birmingham.

The death-rate for the week ending March 4th was 16·2 and the zymotic death-rate was 1·4; the increased mortality was due to whooping-cough and pulmonary tuberculosis. No fresh case of small-pox was notified; there were four patients suffering from this disease in the hospital. For the week ending March 11th the death-rate was 16·8 and the zymotic death-rate was 0·9. One fresh case of small-pox was notified and removed to the hospital. The number of patients in the scarlet fever wards showed an increase from 195 to 204.

March 21st.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

Dr. A. T. H. Waters's Jubilee of Membership of the Liverpool Medical Institution.

AT the ordinary meeting of the Liverpool Medical Institution held on March 16th an address of congratulation to Dr. A. T. H. Waters on the attainment of his jubilee of membership of the society was moved by the President (Dr. James Barr), seconded by Dr. William Carter, and carried by acclamation. The terms of the resolution were as follows:—

We, the members of the Liverpool Medical Institution, wish to offer to Dr. Alderman Thomas Houghton Waters our sincere congratulations on his attaining his jubilee of membership of this institution, of which he is an ex-president, and we earnestly trust that he may be long spared in the intellectual enjoyment of a ripe and mature age. We fully recognise the importance of his valuable contributions to medical literature which secured for him a wide reputation and shed lustre on the Northern Hospital, the Royal Infirmary, and the Liverpool Medical School, with which institutions his life-work had been closely associated. Dr. Waters has witnessed and shared in the great improvements which have taken place in medical practice during the past half century and he still shows the same keen interest as of yore in the advancement of the profession of which he is an honoured and a distinguished member. He took an active part in the growth and development of the British Medical Association, of which he is an ex-president. We feel highly honoured at having a man of such wide professional attainments and general culture among our members and we hope that he may be long spared to take an active interest in the well-being of this institution.

Extensions at the University of Liverpool: Generosity of Mr. E. K. Muspratt.

At the last meeting of the Council of the University an offer was received from the president of the Council (Mr. E. K. Muspratt) to provide for an extension of the chemical laboratories at an estimated cost, including equipment, of £10,000. The offer, needless to say, was gratefully accepted by the Council and a cordial vote of thanks to Mr. Muspratt was passed recognising the services rendered both by himself and by other members of his family in promoting the study of chemical science in Liverpool. The following contributions for the extension and maintenance of the chemical department were also acknowledged by the Council:—£100 a year for five years from the United Alkali Company; £100 from Mr. George Wale of West Kirby; and £100 from Mr. Thomas Threlfall of London.

Country Hospital for Children at Heswall: Gift of an Operating Theatre.

About the middle of last year the committee announced that £30,000 had been collected, of which £20,000 were for building and the balance was for a maintenance fund. By a resolution passed in 1901 no building operations were to be commenced until £30,000 had been collected and it was expected that building operations would be commenced in the spring of 1905. It was intended at first to erect the central block, which was estimated to cost £25,000 and which, with slight alterations, would accommodate from 60 to 70 beds. The £20,000 will only partly provide for the central block. The committee now earnestly appeals for the necessary funds to complete this block and also to erect wards as it feels confident from the great number of applications and the good results obtained from the small scale on which it is at present working at West Kirby that such a hospital is very urgently needed. The committee hopes to receive building tenders in about six weeks. The hospital will be unique in character and form. Its shape will be that of the letter H, the crosspiece representing the central block, consisting of dining rooms, playgrounds, &c., while the wings will contain the wards. When completed the building will be capable of containing 200 beds. In response to an appeal made by Colonel Montgomery at the town hall last week, in his capacity as chairman of the Liverpool Country Hospital for Children, for a donation of £1000 in order to provide a clock tower for the new building about to be erected at Heswall, or for a similar sum to fit up

and to complete an operating theatre, already a gratifying result has taken place. Mr. Holbrook Gaskell has intimated his intention of contributing £1000 towards the erection and complete furnishing of such a theatre. It is not too much to expect that a donation for the clock tower may soon follow.

Children's Convalescent Home, West Kirby.

The need of a nurses' home attached to this convalescent home is felt more and more and as the lease of the house at present rented for the nurses has not long to run the committee expressed the wish at the annual meeting of the supporters of the institution that an effort should shortly be made to raise £2000 for the erection of a permanent nurses' home on the grounds of the institution and connected with the main building. The number of children admitted to the home last year was 1191. The average number of cots occupied was 107. The total number of days spent by the children in the home during the year was 38,945. The year began with a debit balance of £182 and on Dec. 31st last the debt was £162. Subscriptions show a slight increase.

March 21st.

WALES AND WESTERN COUNTIES NOTES

(FROM OUR OWN CORRESPONDENTS.)

Swansea Asylum.

WHEN the Glamorgan asylum was established at Bridgend in 1864 it served the whole county, the population of which at that time was about 350,000. In 1901 the population numbered 860,000 and one result of this very considerable increase has been the decision of the county council to keep the Bridgend institution exclusively for patients from the administrative county. The Cardiff corporation is building a new lunatic asylum for Cardiff lunatics and the Swansea corporation has had notice to provide for those in Swansea. In connexion with the latter town it has been suggested that additions might be made to the recently erected Brecon and Radnor Asylum at Talgarth so that Swansea lunatics could be accommodated there. Talgarth is about 50 miles from Swansea and there is direct railway communication between the two places. The town clerk of Swansea has reported upon the proposal and he suggests that the 360 beds at Talgarth should be increased to 650, of which number the counties of Brecon and Radnor should be entitled to 350 and the county borough of Swansea to 300. The capital cost to Swansea of this scheme would be about £84,000, or some £40,000 more than Swansea is to receive from Glamorgan upon the dissolution of the partnership between the county borough and the county.

Bristol Hospitals.

The Bristol Royal Infirmary was established as long ago as 1735 and at the annual meeting of the board of management it was reported that the income received during 1904 exceeded that of the previous year by £750. There is still, however, an accumulated debt of £15,500. One very pleasing incident of the year was the receipt of a legacy of £142 from a former in-patient who, after devoting a small sum for the erection of a tombstone to her father and mother, made the trustees of the Royal Infirmary her residuary legatees.—The annual report of the Bristol General Hospital, which was established nearly 100 years after the infirmary, records an income for 1904 of £13,218 and an expenditure of £12,654. The number of in-patients treated was 2344, or 250 more than in the previous year.

Brentry Homes for Inebriates.

The management of the inebriates' homes at Brentry, near Bristol, has from time to time met with some adverse criticism. For several years there was a loss upon each year's working and in 1902 there was an accumulated debt of over £6000. The county and borough and district councils in the districts from which patients were sent to the homes contributed varying sums to extinguish the debt and the institution is now in a much more satisfactory condition. The report for 1904, which has just been issued, shows that the weekly cost per head of each inmate was only 13*s.* 8*d.*—a sum which compares favourably with that expended in similar institutions. The medical superintendent (Dr. David Fleck) gives an encouraging report of the work done during the year. He states that 41 of the 69 patients discharged from the homes during 1904 are doing well and appear to be cured completely.

Cardiff Infirmary.

Since the year 1862 successive mayors of Cardiff have each contributed 50 guineas to the funds of the Cardiff Infirmary but no contribution has hitherto been made directly from the corporation rates. As the result of an application from the secretary of the infirmary the corporation decided on March 13th to subscribe 200 guineas to the institution. A motion was proposed to make the grant an annual one but in the end it was decided to leave the corporation free each year to continue the contribution or not.

Visit of the Prince of Wales to Cardiff.

It is announced that the Prince and Princess of Wales will be the guests of Lord Windsor at St. Fagans at the end of June and that on June 28th the Prince, who is Chancellor of the University of Wales, will lay the foundation-stone of the new University College buildings in Cathays-park, Cardiff.

Health of Aberystwith.

In his recently issued annual report the medical officer of health of Aberystwith (Dr. A. Thomas) draws attention to the great scarcity of houses for working men in the town. The water-supply is ample, the storage supply being equal to a ten months' supply, even reckoning a daily consumption of 25 gallons per head of the population. The birth-rate in 1904 was 24 per 1000 and the death-rate was 13·4 per 1000

The Queen Victoria Jubilee Convalescent Home, Bristol.

One of the last public ceremonies attended by the late Queen Victoria was in connexion with the opening of the convalescent home situated on the downs above Bristol. One of the principal reasons for the establishment of the home was to free the beds of the general hospitals in the city and during last year 504 patients were received from the Royal Infirmary and 482 from the General Hospital, while 577 patients came from elsewhere. The weekly cost per head was 14*s.* 9*d.*

The Devon County Council and the Treatment of Pulmonary Tuberculosis.

At the meeting of the Devon county council held on March 16th it was stated that the council did not at present propose to take any further steps towards the provision of a hospital for Devonshire for the treatment of pulmonary tuberculosis.

March 20th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Girgenti Inebriate Reformatory.

THIS reformatory, which is also known as "Girgenti Home," is under the control of the corporation of Glasgow and is situated at Irvine in Ayrshire. It is licensed for females only and has accommodation for 58 inmates who are sentenced for three years under Section 24 (1) of the Inebriates Act of 1898 which authorises the detention of habitual drunkards who commit certain specified offences for the fourth time within a year. The report for the year ending Dec. 31st, 1904, shows that there were 39 inmates in the home at the beginning of that period and that there were 10 new admissions during the year. The first inmate was admitted to the home on Jan. 29th, 1901, and during 1904 the sentences of three years' detention expired in the case of 29 inmates who were accordingly discharged. Inquiries made as to the conduct of these women subsequently to their discharge led to them being classified as follows: doing well, nine; hopeful, six; doubtful, seven; and hopeless, seven. During the year four patients were transferred to the State reformatory at Perth on account of their refractory and pugnacious behaviour. The expenditure was equal on the average to £72 14*s.* 1*d.* per inmate per annum. The report by Dr. John Cunningham of Stewarton, medical officer of the home, refers at considerable length to a "special drug treatment" for inebriety but no information is given as to its nature.

Extension at the University of Aberdeen.

The building of the extension of Marischal College goes on apace. At a meeting of the University buildings committee on March 14th an important improvement of the plans of the masonry, which will have the effect of enhancing the appearance from the quadrangle of the architecture of the main gateway and the portion of the buildings in which the library is to be situated, was agreed

to. The parapet over the gateway, instead of being plain as originally proposed, is now to be panelled and the flanking towers are to have 22 feet added to their height and are to be finished with granite domes to harmonise with those of the existing towers on the north and the south sides of the quadrangle. The pediment over the gateway is to be brought further forward than was originally intended in order to show better the rich moulding of the parapet, while the altering of the pitch of the pediment will also show the dome-capped towers to better advantage. The masonry of the front wall facing Broadstreet has now reached the top of the fourth floor and there now remains only that of the fifth floor to be erected. It is expected that the whole of the masonry will be completed by the autumn.

Appointment of an Aberdeen Graduate.

Dr. Arthur Robertson Cushny has been appointed to the chair of pharmacology and materia medica at University College, London. Dr. Cushny is the fourth son of the late Rev. John Cushny of Speymouth and afterwards of Huntly and graduated with highest honours at Aberdeen in 1889, carrying off the Thomson travelling scholarship and the Murray medal, besides numerous other distinctions. After two years spent at the Universities of Berne and Strassburg, mainly in the study of pharmacology, he was offered and accepted the chair of materia medica and pharmacology at the University of Michigan. Of his work there the *Journal of the American Medical Association* says: "During his 12 years of residence in this country he has made many valuable original contributions to the science of his special subject. Some of his most important papers have been those bearing on the action of digitalis, caffein, &c. He has recently contributed to the English *Journal of Physiology* a series of researches on the physiology of, and the effect of medicinal agents on, the kidneys. He has made valuable contributions on the physiology of the mammalian heart and the interpretation of pulse tracings. His textbook on pharmacology received immediate recognition and has already passed through several editions. In his departure from this country America loses and England gains one of the most thorough scientific investigators in medical science." Dr. Cushny will enter on his new sphere of work in London in May.

March 21st.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Irish Medical Association.

Surgeon-General G. J. H. Evatt's report upon the position of dispensary medical officers is still a subject of dispute. The author has recently addressed a letter to the daily papers in justification of the attitude which he has taken and of the statements which he has made. He claims that his report should be published in full. The same opinion is expressed by some members of the Irish Medical Association, while others point out in the press that the report has never been adopted by the association and that it might well remain as a record of Surgeon-General Evatt's opinions on Irish medical affairs.

City of Dublin Hospital.

The annual meeting of the friends and supporters of the City of Dublin Hospital was held on March 14th. The Hon. Mr. Justice Barton occupied the chair and there was a large attendance which included Her Excellency the Countess of Dudley. Mr. Arthur Benson in seconding the adoption of the report said that although there was accommodation for 140 beds they were only able to maintain 100 owing to insufficient funds.

Royal Veterinary College.

His Excellency the Lord Lieutenant visited the Royal Veterinary College on March 16th and was received by the President, Sir Christopher Nixon, M.D. R.U.I.

Viceregal Visit to the Richmond Hospital.

His Excellency the Lord Lieutenant paid a visit to the Richmond Hospital on March 16th and was received by the board of governors and by the members of the medical staff.

The High Sheriff of Belfast.

As announced in THE LANCET of March 4th a medical man, Councillor Henry O'Neill, M.D. R.U.I., J.P., barrister-at-law, has become High Sheriff. His first duty as High Sheriff has been to try to bring the Belfast court-house into a decent sanitary condition. Early on the day in which the Belfast assizes opened he accompanied the sanitary staff of the city corporation over the whole place and had it thoroughly cleaned and disinfected.

Dispensary Medical Officers' Salaries.

The medical officers of the Coleraine union have asked the board of guardians to reconsider the scale of salaries proposed by them. This scale is for dispensary and workhouse medical officers—minimum salary, £90, increasing by £10 at the end of every five years' service until a maximum of £140 is reached. The Local Government Board has also advised the guardians to reconsider their proposal after further conference with the medical officers, as the scale proposed would not treat fairly medical officers who have large and populous districts and who have long periods of service. The guardians have decided to reconsider the matter on April 1st.

March 21st.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Hepatico-gastrostomy.

AT the meeting of the Surgical Society held on March 8th M. Tuffier related the case of a woman, aged 39 years, on whom he had performed the operation of hepatico-gastrostomy on account of chronic jaundice. On opening the abdomen the gall-bladder was found to be distended by a colourless liquid and evidently did not communicate with the bile-duct. Between the hepatic duct and the common bile-duct there was a small tumour. M. Tuffier incised the hepatic duct and made an anastomosis between it and the anterior wall of the stomach. Eight days later a biliary fistula appeared and the patient left the hospital in an advanced state of cachexia.

Inoculation of Leprosy in the Monkey.

At the meeting of the Academy of Sciences held on Feb. 20th M. Charles Nicolle gave an account of some experiments on the inoculation of leprosy which he had carried out in monkeys. One was a Chinese bonnet monkey and the other was a macaque monkey. They were inoculated in the ear with fragments of tissue from a generalised case of tubercular leprosy. On the sixty-second day nodules appeared in both monkeys at the site of inoculation—namely, on the ear. Two weeks later one of these nodules was excised and was found to contain Hansen's bacillus. The bacilli-bearing cells were smaller than those which have been found in specimens excised from human beings but M. Nicolle attributes this to the lesions in the monkey having been at a very early age.

The Dangers of Overfeeding in Cases of Suspected Tuberculosis.

At a recent meeting of the Therapeutical Society M. Bardet read a paper on the above subject. He cited the case of a patient who on account of loss of weight and some pulmonary symptoms was considered to have tuberculosis and who was therefore sent to Montreux. Here he mended rapidly so that the local practitioner denied the existence of tuberculosis. Returning to Paris he continued his overfeeding and had no cough or at least only a "hysterical" (*quinteuse*) or nervous cough. Nevertheless he suffered extremely, being prone for many months to crises lasting for variable periods of time signalised by wandering pains which were most commonly felt in the neck, the jaw, or the upper part of the back. So severe were these pains that his medical advisers began to suspect the existence of tuberculous disease of the spine. The real explanation, however, turned out to be auto-intoxication from overfeeding in a patient affected by latent dyspepsia. This condition it was which gave rise to the cough and the neuralgia. Whenever he lost weight the cause was dyspepsia. M. Bardet therefore put him on a strict regimen. According to the patient's statements the total amount of his food could be estimated as a quantity representing a mean of 5000 calories per diem and 300 grammes of albumin. M. Bardet considered that he only needed from 2000 to 2200 calories and 60 grammes of albumin. After some weeks the patient had gained three kilogrammes in weight while the cough and the pains disappeared. M. Bardet argued that this case showed very well

that the best way to fatten a patient was to feed him on a quantity of food which was strictly proportional to his physiological powers of dealing with the same.

Blocking of the Intestine by a Biliary Calculus.

At the meeting of the Surgical Society held on March 8th M. Potherat read for M. Michon an account of a case of the above-mentioned condition. The patient was a woman, aged 63 years, on whom M. Michon had to operate. For some 15 years past the patient had suffered from repeated attacks of gall-stone colic while on one occasion she had had an attack of intestinal obstruction which, however, yielded to medical treatment. Finally, however, complete intestinal obstruction supervened for which M. Michon performed laparotomy. He easily localised the obstruction which he found to be due to an impacted calculus. He incised the intestine on its free border and extracted the stone. It was of large size, measuring five centimetres in its longest diameter. Recovery was uneventful.

March 21st.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Operations under Analgesia produced by Intraspinal Injections of Stovain.

Professor Sonnenburg gives, in the *Deutsche Medicinische Wochenschrift* of March 2nd, a report with results of 57 operations (abdominal and on the lower extremities) performed under stovain, a comparatively new local anæsthetic agent which was first tried on human subjects by Reclus. Stovain is claimed to being superior to cocaine and very much less dangerous; in fact, except for slight nausea, headaches, and a moderate degree of excitement in a few cases no serious discomfort has been experienced by any of the patients. As under cocaine the patient feels an advancing numbness and paralysis of the limbs. After a few minutes anæsthesia reaches the umbilical region. Stovain evidently paralyses the motor and sensory roots of the spinal cord as well as those of the sympathetic nerve. It is possible to obtain anæsthesia of from one to one and a half hours' duration without harming the patient. In 11 cases only out of the 57 the anæsthesia did not answer satisfactorily either through insufficiency of duration or of superficial area. In a number of cases in which the injection had been unsuccessful a few drops of chloroform or ether rendered the patient unconscious. The points Professor Sonnenberg emphasises are that not only has spinal anæsthesia reached a new stage of development but that in the future it may be practicable to render anæsthetic the upper parts of the body as well as the lower ones and that stovain is likely to limit greatly the use of chloroform and ether.

Wounds of the Heart.

Dr. Borchardt at the meeting of the Berlin Medical Society on Feb. 15th delivered a very able address on the suturing of wounds of the heart and showed a case in point of a boy who had a wound seven and a half centimetres long inflicted by a stab on the back wall of the left ventricle. The wound was closed by four interrupted silk sutures. Dr. Borchardt considers Dr. Lorenz's resection of a flap from the lower part of the sternum the best method.

Transplantation of Tendons.

Writing in No. 7 of the *Berliner Klinische Wochenschrift* Professor Oppenheim is very emphatic in denouncing the indiscriminate practice of transplantation of tendons. He adduces three cases in which no operation ought to have been performed, one of which in course of time turned out to be a spinal tumour. Although transplantation of tendons now occupies a recognised place in surgery the practice ought to be limited strictly to infantile paralysis of a stationary type.

The Investigation of Cancer.

The proceedings at one of the last meetings of the Berlin Medical Society were of a highly interesting description. Two important addresses on the etiology of cancer were delivered by Professor von Hansemann and Professor von Leyden. The former gave a fascinating account of his experience from the pathologist's point of view. Like Professor Orat, who considered the same question at the preceding meeting, he is decidedly antagonistic to the parasitic theory of the origin of cancer. His contention is that until now there is no evidence whatever of cancer being the result of the action of parasites. The peculiar bodies seen in the protoplasm of cancer cells are probably not parasites. Moreover, Professor von Hansemann roundly denies that through experimental inoculation true cancerous nodules can be produced. What is produced are so-called "inflammatory tumours" ("entzündungsgeschwülste"). There is absolutely no proof for the assumption that cancer is contagious. The public has been unnecessarily alarmed and ought to be reassured on the point. In addition he ridicules the popular idea that a blow or an injury of some kind or other is sometimes followed by a malignant growth. A continuance of slight irritation may act as an exciting factor (e.g., as in the case of chimney sweeps). It is Professor von Hansemann's conviction that there are more than one etiological agent at work and that our present knowledge as regards these agents is trifling. The notable increase in the prevalence of cancer is, according to Professor von Hansemann's experience, not actual but due to improved diagnosis. Professor von Leyden spoke from the standpoint of the medical practitioner. He boldly upholds the plausibility of the parasitic theory and gave a lantern-slide demonstration of "parasites" found in cases of his own observation.

Congress of the Roentgen Society in Berlin.

It is now almost ten years since the x rays were discovered by Professor Wilhelm Roentgen of Würzburg in Bavaria and in honour of the approaching anniversary the Roentgen Society of Berlin will hold a congress in that city lasting from April 30th to May 3rd. His Excellency Professor von Bergmann will preside, the meetings will take place in the rooms of the "Ressource," 18, Oranienburgerstrasse, and an important feature will be an exhibition of apparatus and accessories connected with Roentgen ray work. Professor Eberlein of Berlin is the president of the executive committee; the secretary is Dr. M. Immelmann, 72, Lützowstrasse, Berlin; and the treasurer is Dr. W. Cowl, 6, Gleditschstrasse, Berlin, who will receive and acknowledge notifications of membership, contributions to the proceedings, and other communications concerning the congress. The last-named will receive communications in English. A member's subscription is 15 marks (15*s.*), with which is included the right to receive a printed volume of the proceedings. Cards of membership will be issued at the offices of the congress on April 27th. The opening of the congress and exhibition will take place at 12 noon on April 30th. On May 1st and 2nd at 9 A.M. there will be general meetings, the first one dealing with physico-technical subjects and the latter with medical ones. The sectional meetings will commence at 3 P.M. on each of these days and at 9 A.M. and 3 P.M. on May 3rd.

March 18th.

CANADA.

(FROM OUR OWN CORRESPONDENT.)

Medical Practice in the North-West Territories.

THE Canadian Parliament at the present time is creating two new provinces out of that vast region which has formerly been known as the North-west Territories of Canada and which several years ago through the wise foresight of the late Sir John A. Macdonald was purchased from the Hudson Bay Company and then made part and parcel of the Dominion of Canada. In view of the establishment of these two new provinces some of the medical profession in other parts of Canada have thought that the question of practice in the territories which will on July 1st, 1905, become the provinces of Alberta and Saskatchewan should be left open for a few years and that any practitioner in the other provinces could register there and so have the right for all time, should he desire the same, of going and locating in either of the two aforesaid provinces without undergoing any examination by the respective medical councils which will be organised under the new order of things. There is no indication, however, that the Canadian Government will take any cognisance of this matter but will most likely give to each province exclusive right to control its own educational and medical affairs when autonomy has been granted to them.

Medical Men as Cabinet Ministers.

In the province of Ontario there has been a change of government after a period of 32 years and the Liberal-Conservatives have come into power by an overwhelming majority. A new Cabinet has been successfully formed

by the Hon. J. P. Whitney who apparently has been very wise in his choice of associates for the different portfolios, selecting just three medical men in a Cabinet of nine or ten members. Dr. Robert Allan Pyne, who for many years has been registrar of the Ontario College of Physicians and Surgeons, has been allotted the portfolio of Education. Dr. J. O. Reaume, a general practitioner of Windsor, Ontario, becomes Minister of Public Works, while Dr. Willoughby (whip), of Colborne, has become a Minister without portfolio. One would think from this triumvirate that the medical profession would be well looked after by the legislature of Ontario for the next four years at the least.

Medical Notes from Winnipeg, Manitoba.

At a recent meeting of the board of trustees of the Winnipeg General Hospital Dr. A. M. Campbell was appointed medical superintendent and Miss Edith Lumsden was appointed assistant lady superintendent. The number of patients treated in January, 1905, was 593, as compared with 483 in the same month of 1904. There was a great deal of typhoid fever in Winnipeg during the past year, no less than 2000 cases having been reported, with 133 deaths, and the disease is still prevalent. It is stated that compulsory notification will be enjoined upon the medical profession in that city. Experts from different cities of the United States have been studying the cause of the epidemic in Winnipeg, two of them being Professor Wesbrook, President of the American Medical Health Association, and Dr. Bracken, health officer of Minnesota.

The University of McGill, Montreal.

At one of the recent meetings of the corporation of the University of McGill, Montreal, there was present a special committee from the Medical Faculty, composed of the Dean, Dr. Roddick, Professor Gardner, Professor Ruttan, Professor Shepherd, Professor Adami, and Professor Armstrong, who presented a resolution from the Medical Faculty of date Nov. 26th, 1904, to the effect that in the opinion of the Medical Faculty their interests would be best served by seeking full union with the University. The deputation was warmly welcomed by the corporation and it was agreed to arrange a date for a special meeting with the committee of the Medical Faculty to discuss details towards this end.

Toronto, March 12th.

NEW YORK.

(FROM OUR OWN CORRESPONDENT.)

Professor William Osler and the American Lay Journals.

IN the course of his valedictory address delivered recently to his late colleagues and students of Johns Hopkins University in Baltimore Professor Osler gave vent to some remarks, serious and humorous, which have caused a great stir among the lay journals throughout this continent. He said that he had two fixed ideas, harmless obsessions, the first of which was the comparative uselessness of men over 40 years of age and the second fixed idea was the uselessness of men above 60 years of age. When speaking of this latter class he referred to Trollope's book, "The Fixed Period," in which that writer advocated that men over 60 years of age should be chloroformed. Both these statements were eagerly seized upon by the lay press and in addition the chloroforming recommendation was attributed to Professor Osler himself. The consequence has been that the papers have been flooded with editorial articles and correspondence bearing upon the subject. This has been the most amusing phase of the matter. Aged senators, physicians, business men, indeed, well-known old men in almost every sphere of life, have been interviewed and they and Professor Osler have offered plenty of scope for the ability of the cartoonists. As many of the medical journals here point out, the Americans are somewhat deficient in a sense of humour when they themselves are directly concerned.

Secret Nostrums in the United States.

The United States is a land in which patent medicines and proprietary medicines flourish exceedingly. The drug consumption per capita of the inhabitants of America undoubtedly exceeds that of any other country. Some of the "remedies" sold are good, some are indifferent, and some are distinctly bad. But the worst feature of the situation is that the ordinary individual is unable to discriminate between the different kinds and is wont to take whichever one is recommended to him by the druggist or appears from the description on the bottle as the most likely to benefit the complaint from which he is suffering or imagines that he is suffering. The present situation has been largely brought about by the physician himself. According to an editorial article which appeared in the *Journal of the American Medical Association* of March 4th, the physician, in order to save trouble, became accustomed to prescribe proprietary remedies instead of writing a prescription himself. At first this plan worked very well as the formulæ of the remedies were known and they were manufactured by reputable firms. But gradually abuses crept in and in time the market became flooded with proprietary medicines which were in truth secret nostrums. The physician, of course, has been a great sufferer from this condition of affairs, for when a person sees a medicine which is sold over the counters of druggists' shops endorsed by prominent medical men and warranted to cure the complaint with which he may be afflicted he will in many instances buy this remedy rather than go to a physician for advice. All these remedies, however, are not to be condemned and a Council on Pharmacy and Chemistry has been established by the American Medical Association, the office of which it will be to examine into the composition and status of the various medical preparations that are offered to physicians without being included in the United States Pharmacopœia or in other standard text-books or formularies. These preparations will include the synthetic chemical compounds as well as the so-called proprietary and pharmaceutical specialties put out under trade-mark names. The American Medical Association has sent out a circular letter, which was also published in its journal of March 4th, in which the objects of the Council on Pharmacy and Chemistry are set forth at length. A proprietary medicine is one protected by a copyright or by a trade-mark, while the name of patent medicine implies its meaning. Technically, however, there is no difference between the proprietary medicines manufactured for the use of physicians and the "patent medicines" sold to the public, both being protected simply through copyright or trade-mark names.

March 11th.

Medical News.

UNIVERSITY OF CAMBRIDGE.—Mr. R. P. Gregory, M.A., of St. John's College, has been appointed Senior Demonstrator of Botany.—The third M.B. examination, Part II., will begin next term on May 2nd. The first, second, and third examinations, Part I., will begin on June 12th.—The examination in Sanitary Science for the Diploma in Public Health will begin on April 3rd and will extend to April 8th.—At a Congregation on March 16th the following degrees were conferred:—

M.D.—O. Inchley, St. John's; and C. E. Williams, Caius.
Sc.D.—E. H. Hankin, St. John's.
M.C.—J. Griffiths, King's.
M.B.—G. Cowan, King's; E. Harrison, Trinity; C. D. Mathias, Trinity; C. E. Palmer, Caius; N. G. Harry, Jesus; and H. Statham, Christ's.
B.C.—G. Cowan, King's; C. E. Palmer, Caius; and N. G. Harry, Jesus.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held in March the following candidates passed in the subjects indicated:—

Surgery.—J. Borie (Sections I. and II.), Berne; J. M. S. Duncan, London Hospital; J. H. Harrison (Section I.), Sheffield; W. G. O'Malley, (Section I.), London Hospital; A. R. Paterson, Calcutta; A. Rogers (Section II.), Cardiff and St. Mary's Hospital; L. Sells (Section II.), St. Thomas's Hospital; and P. L. Vawdrey (Section II.), St. Bartholomew's Hospital.
Medicine.—A. Bernfeld (Sections I. and II.), Royal Free Hospital; J. Borie (Sections I. and II.), Berne; H. A. Browning (Sections I. and II.), Cambridge and St. George's Hospital; M. B. Dawson (Section I.), Middlesex Hospital; R. H. Grellet (Sections I. and II.), Guy's Hospital; J. E. Jones, Bristol; G. H. Rains (Sections I. and II.), Westminster Hospital; R. H. Terry (Section I.), Guy's Hospital; and P. C. West (Sections I. and II.), St. Thomas's Hospital.
Forensic Medicine.—D. L. E. Bolton, St. Bartholomew's Hospital; J. Borie, Berne; M. B. Dawson, Middlesex Hospital; and G. H. Rains, Westminster Hospital.
Midwifery.—J. Borie, Berne; and W. H. Lister, Durham.

The diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery:—J. Borie, J. M. S. Duncan, J. E. Jones, and A. Rogers.

ROYAL METEOROLOGICAL SOCIETY.—An interesting exhibition of meteorological instruments arranged by this society was held from March 14th to 17th in the library of the Institution of Civil Engineers, Great George-street, Westminster. The chief feature was the development of recording instruments and also the methods adopted for ascertaining the meteorological conditions in the upper air. The instruments used by Mr. J. Glaisher, F.R.S., in his famous balloon ascents for the British Association for the Advancement of Science, 1862–66, were placed in position on the board as used in the car of the balloon. Mr. W. H. Dines exhibited the kites and meteorograph used by him at Crinan and Mr. W. S. Bruce showed the camera and meteorograph used with kites in the Scottish Antarctic expedition. The thermometers, anemometers, and sunshine recorders used on board the *Discovery* in the recent National Antarctic expedition were also exhibited as well as a number of beautiful water-colour drawings of sky and cloud effects in the Antarctic regions made by Dr. E. A. Wilson. Mr. J. L. Thomas exhibited a life-size "dummy" dressed in the remains of the clothes of a man who was struck by lightning near Cardiff on July 17th, 1903. M. Richard of Paris showed a collection of most of his self-recording instruments and Mr. Halliwell of Southport exhibited his new rain-gauges, anemometers, and evaporation tank. The Royal Meteorological Society arranged in a railed-off inclosure a typical climatological station. The Meteorological Council also showed in position the photographic barograph and the Beckley self-recording rain-gauge which were recently in use at the Fort William observatory. Many other instruments were shown as well as a large collection of photographs, records, drawings, maps, &c., illustrating meteorological phenomena.

AMBIDEXTERITY IN ART.—On March 16th, in the rooms of the Royal Statistical Society, Adelphi-terrace, London, W.C., Sir William Richmond, K.C.B., delivered a lecture on Ambidexterity in Art, being the second lecture in the series the delivery of which has been arranged by the Ambidextral Cultural Society. In his opening remarks the lecturer referred to an extraordinary feat performed by Sir Edwin Landseer who drew the profile of a stag's head with its antlers complete with one hand while with the other he outlined the profile of a horse. This, Sir William Richmond thought, clearly showed that Sir Edwin Landseer must have been able to use both sides of his brain separately and he admitted that he had tried to repeat the experiment and had failed. As evidence that ambidexterity was taught among the ancients he said that the Spartans were compelled to use the sword, the shield, and the spear equally well with either hand, while a modern instance of an ambidextrous nation is the Japanese. Ambidexterity, Sir William Richmond then pointed out, was of the greatest importance to a musician and especially to the organist who had also to use his feet in the execution of his art, so that probably nothing was more difficult to attain than the proper control of the limbs in organ playing. To the artist, and especially to the sculptor, ambidexterity was almost a necessity if he would excel in his art. Not only could one hand be rested while the other was working but in some cases the use of the left hand was required to produce the best work. To educate the left hand required perseverance and as an example of what could be done by perseverence he mentioned two cases. The first was that of a congenitally armless painter who copied the "Descent from the Cross," the colossal picture by Rubens, with his feet alone. The second was the case of a young man, paralysed in all his limbs, who learned to draw and even to engrave on copper using his lips, teeth, and tongue. A copy of a work of Albert Dürer, a seated figure known as the "Man of Sorrows," engraved in this astonishing manner, was handed round for inspection when those present who were acquainted with the original pronounced the copy to be a perfect replica. Sir William Richmond then referred to the ambidexterity of Leonardo da Vinci and showed to what a large extent in various handicrafts the Italians of the present day used their left hand, this being a survival of ancient custom, in which connexion he thought that it would be an interesting experiment to see whether an Italian child learned to become ambidextrous sooner than an English child receiving similar training. He concluded by expressing his belief that the work of the Ambidextral Cultural Society was of the greatest importance and thought that a deputation should wait upon the Board of Education to urge its views being adopted in schools. The lecture was illustrated by drawings showing the difficulty of using the left hand without previous training, much amusement being caused by the lecturer's sketch which was made with both hands simultaneously, and which portrayed a figure whose arms were differently posed. Thus the right hand of the sketch held a stick while the left, in a different position, held a cigar. This was a difficult feat, the difficulty, of course, lying in the fact that not only were the artist's two hands working simultaneously but they were working independently. The next lecture of the series will be given on April 12th, at 5 P.M., in the rooms of the Royal Statistical Society, by Mr. E. Noble Smith who will take for his subject "Ambidexterity in Surgery."

CENTRAL MIDWIVES BOARD.—The members of the Central Midwives Board met on March 16th at 6, Suffolk-street, Pall Mall, London, S.W., Dr. F. H. Champneys being in the chair. The first business on the agenda was the hearing of the charges alleged against Margaret Sulley, a certified midwife, that on Jan. 29th, 1905, at the Cardiff police court, she was convicted of letting lodgings to seamen without being licensed in accordance with the by-laws of the corporation of Cardiff, her application for a licence for such purpose having been previously refused on the ground of her bad character. It was also alleged that she had harboured women of immoral character. The midwife in question attended the meeting of the Board and strenuously protested against the charges. The Board decided that her name should be removed from the roll of midwives. The Board next heard the charge alleged against H. E. Clementson, a certified midwife, that on Oct. 22nd, 1904, while in attendance on a woman in labour she was drunk and thereby incapable of performing her duties as a midwife. This midwife sent a letter to the Board protesting her innocence. The Board decided that her name should be removed from the roll. The Board then considered the applications of candidates for the inspectorship and Dr. Lucy Beatrice Clapham was elected.

IRISH MEDICAL SCHOOLS' AND GRADUATES' ASSOCIATION.—The members and friends of the Irish Medical Schools' and Graduates' Association held their annual festival dinner on March 18th, in the Grand Hall of the Hotel Cecil, Strand, London, W.C., the President of the association, Sir William Whitla, being in the chair. The loyal toasts having been duly honoured, Dr. J. H. Swanton, chairman of the council of the association, introduced Captain Thomas Campbell Mackenzie, D.S.O., R.A.M.C., to the President who asked Lady Whitla to present to Captain Mackenzie the Arnott memorial medal. The medal was granted to Captain Mackenzie for saving life at sea. On his way home from Mauritius during the passage through the Ionian Sea on Sept. 22nd, 1904, one of the crew fell overboard and though the sea was running high and a strong wind was blowing Captain Mackenzie dived fully dressed over the ship's side and securing two lifebelts which were thrown to him lashed the drowning sailor to one, retained the other himself, and waited rescue. The order was given to stop the vessel but owing to the rough sea and the speed of the boat the two men in the water were soon lost to sight and it was 40 minutes before they were found and taken on board in a very exhausted condition. The Director-General of the Army Medical Service wrote stating that Captain Mackenzie was already distinguished for his gallantry and devotion to duty with the Irish Brigade in South Africa and was a credit to his country and to the Irish medical schools. Captain Mackenzie modestly acknowledged the honour in a few brief words, declaring that it was only just his luck that he was present when the accident occurred and that any other man would have done just the same. The toast of "Our Defenders" was intrusted to Mr. J. Gubbins Fitzgerald and was acknowledged by Inspector-General W. H. Lloyd, R.N., Director-General A. H. Keogh, and Colonel Leese. The President of the Royal College of Surgeons in Ireland (Mr. A. Chance) proposed the toast of "Our Guests" and deplored the fact that certain medical schools in London required holders of Irish degrees to take further degrees before they stood a chance of election on the medical staffs. Mr. T. Locke, M.P., in acknowledging the toast, referred in sympathetic terms to the condition of the Irish dispensary medical officers. Mr. J. Tweedy, President of the Royal College of Surgeons of England, at very short notice gave the toast of "The Association" and described how successful it had been.

The President duly acknowledged this toast on behalf of the association and the proceedings terminated.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. Hasenfeld, *privat-docent* of balneology in the University of Budapest.—Dr. Johann Hjort, an eminent Norwegian ophthalmic surgeon.

LITERARY INTELLIGENCE. — The Walter Scott Publishing Company, Limited, announce the publication of a work, "Science and Hypothesis," by M. Poincaré, the well-known French mathematician and *savant*. The work is prefaced with an introduction from the pen of Joseph Larmor, M.A., D.Sc., secretary of the Royal Society.—Tourists about to visit Sicily will find a variety of information on local subjects in *La Sicile Illustrée*, a monthly journal of about 32 pages published by S. Marraffa Abate and Co. of Palermo. The languages used in the paper are principally Italian and French with a smaller proportion of English and German. It is the official journal of the Association Sicilienne pour l'Avantage Économique.—Messrs. J. and A. Churchill are about to publish a work by Dr. James Taylor, entitled "Paralysis and other Diseases of the Nervous System in Childhood and Early Life." A feature of this book will be the numerous reproductions of photographs and illustrations elucidating the text. Another revised edition of "The Diseases of Children," by Dr. J. F. Goodhart and Dr. G. F. Still, will be issued by the same publishers about the same time.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC.—The annual meeting of the governors of this institution was held on March 21st, among the governors present being the Duchess of Albany. Mr. J. Danvers Power, who presided, in moving the adoption of the report, said that every possible recommendation of the committee appointed in 1901 had been complied with, while economies making a total of £2800 had been effected during the year. The hospital was now well worked in every way, the requirements of the medical staff had been satisfied in every way, and the nursing staff had been increased, while investigations were being undertaken by the Nervous Diseases Research Association which would be of great value to all the world. But the hospital was bankrupt. Great reductions had been made in expenses, without any sacrifice of efficiency, for the cost per bed, which had been £94 in 1903, was now only £81, but those responsible for its management required at least another £5000 per annum to carry on their work properly. At the conclusion of the meeting the Duchess of Albany expressed a hope that, since the condition of the hospital had been brought before the public, both as to its improved efficiency and its needs, the public would rightly appreciate and realise the importance of the same.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Training and Registration of Nurses.

MR. CLAUDE HAY has introduced a Bill to provide for the better raining and registration of nurses and for the voluntary registration of private nursing homes. The proposals are "backed" by Sir ARTHUR BIGNOLD and Mr. H. D. GREENE.

The Proposed Abolition of Compulsory Vaccination.

A Bill for the abolition of compulsory vaccination has made its appearance this week. Its sponsor is Mr. BROADHURST who is receiving the support of Mr. THOMAS BAYLEY, Sir JOHN ROLLESTON, Mr. CHANNING, Mr. CORRIE GRANT, and Mr. LEVY.

Dogs and Vivisection.

Following upon the series of questions on vivisection that have been put in the Commons since the session commenced Mr. ELLIS GRIFFITH has promoted a Bill for the prohibition of experiments upon dogs. Among those who are interesting themselves in the matter are Colonel LOCKWOOD, Colonel SANDYS, Mr. CHANNING, Mr. FIELD, Mr. TOMKINSON, and Mr. WEIR.

The Physical Condition of School Children.

The terms of reference to the inter-departmental committee on this subject which the President of the Board of Education has appointed in concurrence with the President of the Local Government Board are as follows: (1) to ascertain and to report on what is now being done and with what result in respect of medical inspection of children in public elementary schools; (2) and further, to inquire into the methods employed, the sums expended, and the relief given by various voluntary agencies for the provision of meals for children at public elementary schools, and to report whether relief of this character could be better organised without any charge upon public funds both generally and with special regard to children who, though not defective, are from malnutrition below the normal standard.

The London County Council General Powers Bill.

When this Bill came before the Commons on March 16th two instructions to the committee which will have to consider the Bill in detail were carried. The first was adopted by a majority of six and it was that the committee should omit the clause which would enable the Council from time to time to make representations to the Local Government Board as to the manner in which the Sale of Food and Drugs Acts, 1875 to 1899, are administered within the county. The second was to the effect that the committee should substitute in Part 4 of the Bill the medical officer of a borough council for the medical officer of the County Council. It was urged by Mr. CLAUDE HAY that matters connected with milk-supply and the dangers arising from milk-borne disease were much more likely to be effectively dealt with by the medical officer of the district than by the medical officer of the County Council. The instruction was agreed to by a majority of 14.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 15TH.

The Higher Education of Nurses.

Mr. BLACK asked the Secretary to the Board of Trade whether the President would withhold his decision as to granting a licence to the Society for Promoting the Higher Education of Nurses until the select committee appointed by the House to inquire into the registration of nurses had reported.—Mr. BONAR LAW answered: The Board of Trade proposes to hear both the applicants for, and the objectors to, the grant of a licence to the Society for Promoting the Higher Education of Nurses and until after such hearing does not propose to come to any decision as to postponement or otherwise.

The Number of Commissioners in Lunacy.

Sir JOHN TUKE asked the Attorney-General whether his attention had been drawn to the application made in the report of the Commissioners in Lunacy to the Lord Chancellor for 1904 for an increase to the number of the Commissioners on the ground that such addition was absolutely necessary and was urgently needed for the efficient and satisfactory administration of the Lunacy Acts; and whether he could inform the House whether any steps were being taken to give effect to this application.—Sir ROBERT FINLAY said: Attention has been drawn to the application referred to in the question and the subject is now under consideration by the Lord Chancellor and the Treasury.

Vaccination Exemption Certificates.

Mr. WEIR asked the President of the Local Government Board whether he would state how many certificates of exemption from vaccination were granted during the year ending Dec. 31st, 1904, and how the figures compared with the two previous years.—Mr. GERALD BALFOUR said: The returns made to the Local Government Board show the number of certificates of conscientious objection received by the vaccination officers during the year. This number may be taken as substantially agreeing with the number granted during the year. The returns for 1904 are not quite complete but the number of certificates received during that year may be stated approximately as 39,750. The numbers in 1902 and 1903, respectively, were 33,632 and 37,260.

The Consumption of Methylated Spirit.

Mr. JOSEPH DEVLIN asked the Chief Secretary for Ireland whether his attention had been called to the mischief wrought amongst the working class in Derry city and county by the consumption of methylated spirit; and whether, in view of the consequences proceeding therefrom, he would take steps to have restrictions placed on the sale of this article and to warn the people of the dangers arising from its use.—Mr. LONG replied: The attention of the Board of Inland Revenue has been directed to the practice of drinking methylated spirit in Londonderry. It is an offence under the Spirits Act, 1880, to sell such spirit as a beverage. The officers of the Inland Revenue are using their best endeavours to procure evidence which will sustain proceedings under the Act in this respect and the police have been instructed to afford them every assistance in the matter.

THURSDAY, MARCH 16TH.

The Feeding of School Children.

Mr. JAMES HOPE asked the Secretary to the Board of Education whether he hoped during the present session to introduce legislation dealing with the feeding of children in public elementary schools.—Sir W. ANSON replied: It is not intended to introduce any such legislation in the present session.

The Dismissal of Medical Officers in Scotland.

Mr. CATHCART WASON asked the Lord Advocate whether his attention had been directed to the numbers of cases of dismissal of medical officers in Scotland and the hardships suffered thereby by the poor and to the report of the departmental committee of the Local Government Board to inquire into such cases, and to the fact that the Medical Association had publicly advertised warning applicants against accepting appointments in certain parishes; and whether, in all the circumstances, he would bring the urgency of the case before the Government with a view to immediate legislation.—The LORD ADVOCATE answered: The matters referred to have been considered by the Secretary for Scotland but the Government cannot undertake to legislate this session. The honourable Member has himself introduced a Bill on the subject and, as he is aware, the question is a very controversial one.

Vivisection in Glasgow.

Mr. WEIR asked the Home Secretary whether he would state how many animals were inoculated with the rabies virus in the performance of the two experiments carried out by Mr. R. M. Buchanan at the Veterinary College, Glasgow, under the Cruel y

to Animals Act, 1876, referred to in the government inspector's report for 1903; and the number of animals used for the purpose of vivisection under the above Act for the years 1903 and 1904.—Mr. AKERS-DOUGLAS replied: In the two experiments in question two rabbits were inoculated, not with rabies virus, but with emulsion of the brain of a dog which had been killed by the police on suspicion that it was rabid. The experiments were carried out at the Glasgow Public Health Laboratory, not at the Veterinary College. In answer to the second part of the question I have to say that the returns for 1904 are not yet complete. In 1903 the number of experiments performed was 19,084, of which nearly 17,000 were inoculation or feeding experiments. The number of animals used for the purpose of these experiments cannot be precisely stated but it is slightly less than the total number of experiments.

Cats and Dogs for Vivisection.

Sir FREDERICK BANBURY asked the Home Secretary whether he was now in a position to make a further statement as to the purchase of cats and dogs from persons convicted of stealing these animals for the purposes of vivisection.—Mr. AKERS-DOUGLAS answered: I fear I cannot add anything to the answers on this subject which I gave on the 23rd of last month. I have no information showing that cats and dogs are purchased for the purposes of experiment from persons who have been convicted of stealing those animals.

The Report on Physical Deterioration.

Sir JOHN GORST asked the First Lord of the Treasury whether the Government would refer the report of the Departmental Committee on Physical Deterioration to a Select Committee of the House of Commons.—Mr. BALFOUR said: In answer to my honourable friend I have to say that so far as the report to which he refers relates to public elementary schools a departmental committee has been appointed to obtain precise information as to the extent of the evils complained of, and I think in the meantime the course which he suggests would not be desirable. I should like to reserve judgment on that until the departmental committee has reported.

Mosquito-Proof Sleeping Rooms.

Mr. CATHCART WASON asked the Secretary of State for the Colonies whether in view of the established relations between malaria and mosquitoes he would cause inquiry to be made as to the expediency of erecting mosquito-proof sleeping rooms for the employés on our West African railways.—Mr. LYTTELTON said: The quarters provided for railway employés in Sierra Leone and Lagos include mosquito-proof rooms. As regards the Gold Coast I have no information but I will make inquiry. I may add that mosquito nets have also been supplied by the Government but I understand that some change has recently been made in Lagos and I will inquire about it.

MONDAY, MARCH 20TH.

The Physical Condition of School Children.

Sir JOHN GORST asked the Secretary to the Board of Education whether on the occasion of his visit to the Johanna-street Board School he found any children unfit to attend to the duties of the school in a proper way; whether he had any reason to think that Dr. A. Eichholz in his evidence before the Commission on Physical Deterioration exaggerated the proportion of such children; and whether public money was still spent at this school in providing instruction which the children could not from their physical condition attend to.—Sir WILLIAM ANSON replied: On the occasion of my visit to the Johanna-street Council School the children were attending to the duties of the school in a proper way, but I think that many of them might with advantage have been provided with a curriculum more suited to their capacities. I am not in a position to criticise the medical evidence of Dr. Eichholz but I have good reasons for thinking that it may not be final. The school is still being conducted as a public elementary school.

Sir JOHN GORST asked the Secretary to the Board of Education whether he would give the names of the departmental committee which the President of the Board of Education had appointed for the purpose of providing useful and precise information on the physical condition of children in public elementary schools and the date of their appointment; what methods the committee had adopted for obtaining information more precise than that furnished to the Committee on Physical Deterioration by Dr. Eichholz and other witnesses; and to what use the information thus provided had been put.—Sir WILLIAM ANSON said: An inter-departmental committee, consisting of Mr. H. W. Simpkinson, C.B., assistant secretary of the Board of Education, chairman; Dr. H. Franklin Parsons, assistant medical officer under the Local Government Board; Mr. C. Jackson, chief inspector of elementary schools under the Board of Education; the Honourable Maude Lawrence, chief woman inspector of the Board of Education; Mr. R. Walrond, senior examiner of the Board of Education; with Mr. E. H. Pelham, junior examiner of the Board of Education, as secretary, was appointed on March 9th to collect certain information as to the medical inspection of children in elementary schools and as to the provision of meals for such children by voluntary agencies. I am sending the right honourable Member the terms of reference. I am not prepared to state the methods which the committee will employ for obtaining this information. But I hope that it will provide information more thorough and precise than any which we at present possess and will enable deductions to be drawn less indefinite in character than those which are supplied in the report of the Committee on Physical Deterioration.

Sir WALTER FOSTER asked the President of the Local Government Board whether, in view of the evidence given before the Committee on Physical Deterioration relating to the condition of children, he would issue a circular to boards of guardians calling their attention to their powers and duties as to underfed children, and pointing out the importance, in the case of giving out-relief to young children, of giving milk rather than a large amount of bread.—Mr. GERALD BALFOUR said: So far as I am aware there is no reason to suppose that boards of guardians are not alive to the powers and duties which attach to them in relation to underfed children, where application is made to them for relief. With regard to the latter part of the question I think that boards of guardians may be trusted to use their discretion as to giving milk as out-relief to young children. The Local Government Board called the attention of its inspectors to the subject last year. It does not appear to me to be necessary to issue a circular as suggested.

Underground Bakehouses.

Mr. FIELD asked the President of the Local Government Board whether his attention had been drawn to the report of a case in which the mayor, aldermen, and council of the borough of Paddington were summoned for refusing to grant a certificate to allow a baker to use his premises; and whether having regard to the observations made by the stipendiary magistrate who dealt with the case (granting at once the necessary certificate) he would in the interests of traders issue a circular to all borough councils and administrative bodies as to their duties under the Acts relating to public health and sanitation.—Mr. GERALD BALFOUR replied: I have seen a newspaper report of the case referred to and have made some inquiry with regard to it. I understand that the consideration with which the Paddington borough council and its officers have administered the enactment under which the proceedings were taken has been acknowledged by a considerable number of the proprietors and lessees of underground bakehouses in the borough, and it does not seem to me necessary to issue any such circular as that suggested.

Combating Plague in India.

Sir WALTER FOSTER asked the Secretary of State for India whether his attention had been drawn to the successful action taken by the Madras municipal authorities in repressing a recent outbreak of plague in the fishing village of Kuppam; whether he was aware that the measures by which plague had been kept out of the city of Madras had met with popular approval; and whether he would invite the Government in other provinces to follow the example of Madras and to take measures for the prevention of plague in consultation with the municipal and rural local authorities.—Mr. BRODRICK answered: I have seen accounts of the case which reflects great credit on the local health officers. The hamlet, however, was very favourably situated for the early discovery of the outbreak and for prompt and effective action to stop its spread. All provinces in India have rules which prescribe that similar preventive measures shall be taken by Government officers in consultation with the municipal and rural authorities and with the concurrence of the people. But the degree of success must necessarily depend on local circumstances.

Medical Officers of Health and Practice.

Mr. WEIR asked the Lord Advocate how many county medical officer of health in Scotland now engage in general or consultative practice.—The LORD ADVOCATE replied: I am informed by the Local Government Board that the number is six.

TUESDAY, MARCH 21ST.

Limited Liability Companies and Poison Regulations.

Mr. REMNANT asked the Home Secretary whether, in view of the fact that limited liability companies were not amenable to the poison regulations prescribed by the Pharmacy Act, 1868, and approved by the Privy Council, and to the statement of the President of the Board of Trade that the question of amending the law to remedy this evil would not be germane to a Companies Bill, he would take into consideration the expediency of recommending that facilities should be given during the present session for the passing of the Pharmacy Acts Amendment Bill, which was designed to place companies in the same position as individuals in regard to the sale of poisons.—Mr. AKERS-DOUGLAS replied: I regret that I cannot promise facilities to the Bill referred to by the honourable Member. I am not in a position to add anything to the answer which I gave the other day to Sir John Tuke.

Pauper Alien Lunatics and Imbeciles.

Colonel LEGGE asked the Home Secretary whether he could give the number of pauper alien lunatics and imbeciles maintained in lunatic asylums and public institutions in the United Kingdom, and whether any means existed of ascertaining the country of origin of such lunatics and imbeciles.—Mr. AKERS-DOUGLAS said: The number of pauper alien lunatics maintained in county and borough asylums in England and Wales was in 1903 317, as is shown in Table XIVA on page 146 of the last report of the Commissioners in Lunacy. The same table gives the countries of origin, information as to which is obtained from the medical officers of asylums. I regret that I am unable to give the number of alien imbeciles maintained in public institutions other than asylums and also that, without longer notice, I cannot give the number of alien lunatics for the whole of the United Kingdom.

Vaccination Exemption.

Mr. WEIR asked the Home Secretary whether he was aware that a labourer named Harrison was recently refused a certificate of exemption from vaccination for his child by the magistrates sitting at Spilsby and Boston; that he was subsequently summoned and in default of payment of the fine of £1 and £1 2s. 6d. costs was sent to prison for one month; and that since this man's release he was on Feb. 27th again summoned for not obeying the vaccination order; and, in view of the fact that he had repeatedly endeavoured to make clear that he conscientiously believed that vaccination would be prejudicial to the health of his child, would the Home Secretary consider the expediency of directing the attention of the magistrates at Spilsby and Boston to the remarks made by the Lord Chief Justice at Birmingham on July 27th last in regard to the principles on which the Act ought to be administered.—Mr. AKERS-DOUGLAS answered: I have made inquiries into this case and I learn that the remarks on the subject of conscientious objection to vaccination made by the Lord Chief Justice at the Birmingham summer assizes were brought to the notice of the Spilsby magistrates before they convicted Harrison. The question whether the circumstances justify the issue of a certificate of exemption is in each case one for the discretion of the magistrates, with which I have no power to interfere.

BOOKS, ETC., RECEIVED.

GOVERNMENT PRINTING OFFICE, Washington.

Report on the Origin and Spread of Typhoid Fever in U.S. Military Camps during the Spanish War of 1898. By Walter Reed, Major and Surgeon, U.S. Army, Victor C. Vaughan, Major and Division Surgeon, U.S. Volunteers, and Edward O. Shakespeare, Major and Brigade Surgeon, U.S. Volunteers. Vol. I. Vol. II. Maps and Charts.

REBMAN, LIMITED, 129, Shaftesbury-avenue, Cambridge-circus, W.C.

The Effects of Tropical Light on White Men. By Major Chas. E. Woodruff, A.M., M.D., Surgeon, United States Army. Price 10*s.* 6*d.* net.

The Modern Mastoid Operation. By Frederick Whiting, A.M., M.D., Professor of Otology, Cornell University Medical College, Aural Surgeon to New York Eye and Ear Infirmary. Price 27*s.* 6*d.* net.

WILLIAMS AND NORGATE, 14, Henrietta-street, Covent-garden, W.C.

(For THE UNIVERSITY PRESS of Liverpool.)

Liverpool School of Tropical Medicine. Memoir XIV. Report on the Sanitation and Anti-Malarial Measures in Practice in Bathurst, Conakry, and Freetown. By Rubert Boyce, M.B., F.R.S., Professor of Pathology, the University of Liverpool; Arthur Evans, M.R.C.S., L.R.C.P.; and H. Herbert Clarke, M.A., B.C. Cantab. February, 1905. Price not stated.

WRIGHT, JOHN, AND CO., Bristol. (SIMPKIN, MARSHALL, HAMILTON, KENT, AND CO., LIMITED, London.)

The Medical Annual: A Year-Book of Treatment and Practitioner's Index. 1905. Twenty-third year. Price 7*s.* 6*d.* net. Stereoscopes at 2*s.* or 2*s.* 6*d.* extra.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

ADAMS, GEORGE BASIL, M.B., B.S. Oxon., has been appointed Resident Medical Officer at the City of London Hospital for Diseases of the Chest, Victoria Park, E.

ATKINSON, JOHN PARKINSON, M.D. Glasg., L.R.C.P. Lond., L.R.C.S. Edin., has been appointed Medical Officer of Health of Lynton.

BENTON, S. L., M.R.C.S., L.R.C.P. Lond., has been appointed House Physician to the City of London Hospital for Diseases of the Chest, Victoria Park, E.

BERRY, FREDERICK CHARLES, M.D., B.Ch. Dub., has been re-appointed Medical Officer of Health of Burnham (Somerset).

BREWER, A. H., M.R.C.S., L.R.C.P. Lond., has been appointed Honorary Anæsthetist to the Metropolitan Throat and Ear Hospital.

BUZZARD, E. FARQUHAR, M.D. Oxon., M.R.C.P. Lond., has been appointed Assistant Physician to the National Hospital for the Paralysed and Epileptic, Queen-square, London, W.C.

CHAPMAN, JOHN E., M.R.C.S., L.R.C.P. Lond., has been appointed a District Medical Officer by the South Molton (Devon) Board of Guardians.

CLAPHAM, LUCY B., M.B. Lond., has been appointed Inspector under the Central Midwives Board.

COOMBS, CAREY FRANKLIN, M.D., B.S. Lond., has been appointed Curator of the Museum at the Bristol General Hospital.

DICK, WILLIAM, L.R.C.P. & S. Edin., has been appointed Junior House Surgeon to the General Infirmary, Macclesfield.

DRINKWATER, J. P., M.R.C.S. Eng., has been re-appointed Medical Officer to the Llangollen Urban District Council.

GRUNBAUM, O. F. F., M.D. Cantab., M.R.C.P. Lond., D.Sc., has been appointed Physician to Out-patients at the City of London Hospital for Diseases of the Chest, Victoria Park, E.

HANSON, EDGAR RASTRICKE, L.R.C.P. & S. Edin., has been appointed a District Medical Officer by the South Molton (Devon) Board of Guardians.

HARVEY, ALFRED, M.B. Lond., M.R.C.S., L.S.A., has been appointed Medical Officer to the Children's Homes by the Bristol Board of Guardians.

HITCHENS, CHARLES VERNON, M.R.C.S., L.S.A., has been re-appointed Medical Officer of Health of Weston-super-Mare.

JOSEPH, H. M., M.B., has been appointed Resident Medical Officer at the Hospital for Epilepsy and Paralysis, Maida Vale.

MOORE, STUART A., B.A., M.B., B.Ch. Edin., has been appointed Junior House Surgeon to the Liverpool Stanley Hospital.

MORGAN, ALBERT T., M.D. Brux., L.S.A., has been appointed Medical Officer to the Children's Homes by the Bristol Board of Guardians.

PURVES, W. LAIDLAW, M.D. Edin., M.R.C.S., has been appointed Consulting Ophthalmic Surgeon to the Hospital for Epilepsy and Paralysis, Maida Vale.

ROSS, GEORGE W., M.R.C.S., L.R.C.P. Lond., has been appointed House Physician to the City of London Hospital for Diseases of the Chest, Victoria Park, E.

SMYTH, R. JAMES, M.R.C.S., L.R.C.P. Lond., has been appointed a District Medical Officer by the South Molton (Devon) Board of Guardians.

SYDENHAM, GEORGE F., M.R.C.S., L.S.A., has been appointed a District Medical Officer by the South Molton (Devon) Board of Guardians.

TAYLER, GEORGE CHRISTOPHER, M.D., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer for the Third District by the Westbury (Wiltshire) Board of Guardians.

TONGUE, E. J., M.R.C.S., L.R.C.P. Lond., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Winterton District of the county of Lincoln.

WADE, REGINALD, M.R.C.S., L.S.A., has been re-appointed Medical Officer of Health of the Highbridge (Somerset) Urban District.

WIGHAM, W. HARPER, M.D. Durh., M.R.C.S., has been elected a District Medical Officer by the South Molton (Devon) Board of Guardians.

WISE, NICHOLAS VINCENT, L.R.C.P. & S. Irel., has been appointed Medical Officer for the Second District by the Westbury (Wiltshire) Board of Guardians.

YOUNG, JAMES, M.D., C.M. Glasg., has been appointed Medical Officer to the Children's Homes by the Bristol Board of Guardians.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BIRKENHEAD BOROUGH HOSPITAL.—Junior Resident House Surgeon. Salary £80 and fees.

BIRMINGHAM AND MIDLAND EYE HOSPITAL.—Resident Surgical Officer. Salary £100 per annum.

BIRMINGHAM, RUBERY HILL ASYLUM.—Two Junior Assistant Medical Officers. Salary £150 per year, with board, lodging, and washing.

BOURNEMOUTH, ROYAL VICTORIA HOSPITAL.—Honorary Medical Officer in Charge of Electrical Department.

BRIGHTON THROAT AND EAR HOSPITAL, Church-street, Queen's-road.—Non-Resident House Surgeon for six months, renewable. Salary at rate of £75 per annum.

CANCER HOSPITAL, Fulham-road, S.W.—Two Assistant Surgeons.

CENTRAL MIDWIVES BOARD.—Examiners.

CHARING CROSS HOSPITAL.—Anæsthetist.

CHARTHAM, KENT COUNTY ASYLUM.—Third Assistant Medical Officer, unmarried. Salary £140, with board, quarters, attendance, and washing.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria-park, E.—Pathologist. Salary 100 guineas per annum.

EAST LONDON HOSPITAL FOR CHILDREN AND DISPENSARY FOR WOMEN, Shadwell, E.—Medical Officer for the Casualty Department for six months, renewable. Salary at rate of £100 per annum.

GRAVESEND HOSPITAL.—House Surgeon. Salary £100 per annum, with board and residence.

HEREFORDSHIRE GENERAL HOSPITAL.—House Surgeon, unmarried. Salary £100 per annum, with board, apartments, and washing.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—Resident House Physicians for six months. Honorarium of £25.

HOSPITAL FOR EPILEPSY AND PARALYSIS AND OTHER DISEASES OF THE NERVOUS SYSTEM, Maida-vale, W.—Ophthalmic Surgeon.

LIVERPOOL DISPENSARIES.—Head Surgeon, unmarried. Salary £200 per annum, with board and apartments.

MANCHESTER, CHORLTON-UPON-MEDLOCK DISPENSARY.—Resident House Surgeon, unmarried. Salary £120 per annum, with rooms and attendance.

MIDDLESBROUGH, NORTH RIDING INFIRMARY.—House Surgeon, unmarried. Salary £100 per annum, with board, residence, and washing.

PARISH OF LAMBETH.—District Medical Officer. Salary £70 per annum, with fees.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.—House Physician and Casualty House Surgeon for six months. Board, lodging, and washing provided. Also Female House Physician and Female House Surgeon for six months. Board, lodging, and washing provided. Also Assistant Anæsthetist for six months.

ROYAL WATERLOO HOSPITAL FOR CHILDREN AND WOMEN, Waterloo-bridge-road, S.E.—Physician to Out-patients.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.—Honorary Physician.

SEAMEN'S HOSPITAL SOCIETY, Greenwich, S.E.—Dreadnought Hospital, Greenwich: House Physician, salary £65 per annum; House Surgeon, salary £65 per annum; Junior Resident Medical Officer, salary £40 per annum. At the Branch Hospital, Royal Victoria and Albert Docks: Senior House Surgeon, salary £100 per annum; House Surgeon, salary £50 per annum. With board, residence, and washing in each case.

STAFFORD, STAFFORDSHIRE GENERAL INFIRMARY.—Honorary Ophthalmic Surgeon.

UNIVERSITY COLLEGE, LONDON.—Third Honorary Anæsthetist.

WESTON-SUPER-MARE HOSPITAL.—House Surgeon, unmarried. Salary £100 per annum, with board and residence.

WINDSOR AND ETON ROYAL DISPENSARY AND INFIRMARY.—House Surgeon, unmarried. Salary £120 per annum, with residence, board, laundry, and attendance.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—Assistant House Physician for six months. Honorarium at rate of £75 per annum, with board, lodging, and washing.

YORK DISPENSARY.—Resident Medical Officer, unmarried. Salary £120 a year, with board, lodging, and attendance.

Births, Marriages, and Deaths.

BIRTHS.

ALFORD.—On March 16th, at Stafford Lodge, Weston-super-Mare, the wife of H. T. Marmaduke Alford, L.R.C.P. Lond., M.R.C.S. Eng., of a daughter.

ENSOR.—On March 16th, at Southall, Middlesex, the wife of Charles William Ensor, M.R.C.S. Eng., L.R.C.P. Lond., of a son.

EVANS.—On March 16th, at Upper Wimpole-street, W., the wife of Willmott Evans, M.D., F.R.C.S., of a daughter.

GLASIER.—On March 15th, at Mildenhall, Suffolk, the wife of Howard Glasier, M.A., M.B. Cantab., M.R.C.S., of a son.

LESLIE.—On March 13th, at High-street South, East Ham, Essex, the wife of John Gordon Leslie, M.B., C.M., of a son.

MARRIAGE.

CREAN—HEREDIA.—On March 14th, at St. George's, Hanover-square, Captain T. J. Crean, V.C., R.A.M.C., to Victoria, only daughter of Señor Don Tomas Heredia, Malaga, Spain.

DEATH.

SWINHOE.—On the 18th March, at Park House, Swindon, Wilts, Astley Cooper, third son of George Money Swinhoe, of pneumonia.

N.B.—A fee of 5*s.* is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

A QUESTION OF FEES.

To the Editors of THE LANCET.

SIRS,—Would you kindly help me with your opinion in the following case? A lady, a patient of mine, has a distant cousin who has to earn her living as a companion with a salary varying from £15 to £20 a year. While staying with her employer at a small country village this cousin is attacked with hæmoptysis and is for some weeks seriously ill. The resident doctor, living quite near, is called in and he advises and supplies medicine for about three months; in all 96 visits are paid, but some of these are at the rate of two and three per day. There is no doubt that the doctor is most kind and attentive, but some of the visits charged, especially in the case of second and third visits, were merely visits of inquiry at the end of the day's round. During the course of the illness my patient pays a visit to her cousin and casually meeting the doctor says, "I hope that you will do what you can for Miss ——." In due course an account is sent to Miss ——, amounting to £32, a sum entirely beyond her power to pay. By degrees her friends, including my patient, help her to pay £12. She is then pressed by the doctor to pay the full sum and he also threatens my patient with the county court. She puts the matter in the hands of her lawyer who advises her that she has no legal liability, informs the doctor that he is ready to accept service of a summons, and hears no more of it.

My patient is not desirous of taking refuge behind a legal technicality from a just claim and is willing to pay a reasonable sum to settle the account. She is, therefore, anxious to ascertain what would be a fair charge in the circumstances. I have advised that 3*s.* 6*d.* a visit to include medicine would be a reasonable sum. The detailed account shows 96 visits charged—this would be £16 16*s.*; £1 1*s.* was paid as a consultation fee and 30*s.* were paid for ice and brandy, making a total of £19 7*s.* Of this £12 has been paid and my patient is ready to pay a further sum of seven guineas to settle the account on behalf of her cousin. Would this be fair?

I am, Sirs, yours faithfully,

March 20th, 1905. A CONSULTANT.

*** We should say from the circumstances detailed above that 3*s.* 6*d.* per visit is a reasonable sum to offer.—ED. L.

THE "SAFETITE" DOOR CATCH.

THIS is an ingenious device for securely fastening an ordinary room door or house door in such a way that it may remain open to the extent of a few inches. On shipboard, especially in vessels which enter warm latitudes, the doors of the officers' and passengers' rooms are usually provided with hooks for this purpose but these are no protection against intruders as they can obviously be unhooked from either side of the door. The "safetite" door catch, on the contrary, is fixed inside the door and can only be applied or unfastened by the occupants of the room. A door may therefore by this means be kept partly open for the purpose of admitting fresh air without the possibility of anyone entering from the outside. This catch works on nearly the same principle as the chain of a front door. A knob, supported by a narrow neck, slides on a short metal rod hinged to the door-post, while at a corresponding level on the door itself there is a tube open at one end and having a longitudinal slot. The knob is made to enter the end of the tube and as the door is gradually opened the neck of the knob slides in the slot until the end of the latter is reached and further progress thereby stopped. The catch is made in three qualities, costing respectively 2*s.* 8*d.*, 3*s.*, and 3*s.* 6*d.* each. It may be obtained at 12, Irwell-chambers West, Union-street, Liverpool.

THE CASE OF DR. A. D. GRIFFITHS.

To the Editors of THE LANCET.

SIRS,—Will you kindly allow me to acknowledge the receipt of the following additional contributions? Mr. N. E. Thomas, £1 1*s.*; Dr. S. H. Steel, 5*s.*; Mr. Fred. Buckham, 5*s.*; previously acknowledged, £69 18*s.* I am, Sirs, yours faithfully,

ALEX. P. FIDDIAN, M.B. Lond.,

23, The Walk, Cardiff, March 21st, 1905. Honorary Treasurer.

C. A. M.—We do not know of any text-book of "pathology" in which such conditions as "coma" and "delirium" are described. In the larger treatises on medicine, such as Professor Clifford Allbutt's "System," the pathology of delirium and coma will be found to be discussed under the various diseases in which they occur.

K. C.—We sympathise with our correspondent's views in general, but having regard to the particular journal in which the announcement appeared and to the name of the invalid we think that in this instance the offence does not lie with the medical men.

R. C.—We think that Dr. X ought to have made some communication to Dr. A, but perhaps he was assured that this had been done by the patient's family.

Inquirer.—We propose to publish a note on the method.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (27th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.).

TUESDAY (28th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Royal Ear (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.).

WEDNESDAY (29th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.) Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.).

THURSDAY (30th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), St. Mark's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.).

FRIDAY (31st).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Central London Throat and Ear (2 P.M.), Royal Ear (10 A.M.).

SATURDAY (1st).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

MONDAY (27th).—MEDICAL SOCIETY OF LONDON (11, Chandos-street, Cavendish-square, W.).—8.30 P.M. Papers:—Dr. H. D. Rolleston: Pericolitis Sinistra.—Dr. A. E. Carver: Acute Infective Colitis.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN (20, Hanover-square, W.).—7 P.M. Council. 8 P.M. Casual Communication:—Mr. C. A. Clarke: A Sterilisable Bur-Box. Paper:—Mr. J. T. Carter: The Evolution of the Vertebrate Skull, with special reference to the Development and Suspension of the Jaws (illustrated with lantern slides and specimens).

TUESDAY (28th).—ROYAL MEDICAL AND CHIRURGICAL SOCIETY (20, Hanover-square, W.).—8.30 P.M. Papers:—Dr. T. Oliver: Ankylostomiasis as affecting Miners.—Mr. A. W. M. Robson: (1) On the Operation of Jejunostomy (description of a new method); (2) Actinomycosis of the Gall-bladder.

THERAPEUTICAL SOCIETY (Apothecaries' Hall, Blackfriars).—3.30 P.M. Council Meeting. 4 P.M. Papers:—Dr. J. Burnet: The Therapeutics of Aspirin and Mesotan.—Dr. Hutchison: The Treatment of Graves' Disease by Iodo-ether Injections.

THURSDAY (30th).—CHILDHOOD SOCIETY AND THE BRITISH CHILD-STUDY ASSOCIATION (Parkes Museum, Margaret-street, W.).—8 P.M. Discussion on Provision made under the Elementary Education Act, 1899, for Training of Defective Children (opened by Dr. F. Beach, Dr. G. E. Shuttleworth, Mrs. D. Berry, M.D., and Mrs. E. M. Burgwin). (Arranged by the Childhood Society.)

NEUROLOGICAL SOCIETY OF THE UNITED KINGDOM (11, Chandos-street, Cavendish-square, W.).—8.30 P.M. Clinical Evening. Cases in attendance at 8 P.M.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MONDAY (27th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Dr. Shuter: Anæsthetics.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. J. H. Sequeira: Clinique. (Skin.) 5.15 P.M. Prof. W. Cheyne: Tubercular Diseases of Joints, their Diagnosis and Treatment.

TUESDAY (28th).—ROYAL COLLEGE OF PHYSICIANS OF LONDON (Pall Mall East).—5 P.M. Dr. W. H. Allchin: Some Aspects of Malnutrition. (Lumleian Lecture.)

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Mr. Paget: Surgical Cases.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. W. Carr: Clinique. (Medical.) 5.15 P.M. Dr. L. Smith: Some Clinical Aspects of Nephritis.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—4.30 P.M. Lecture-Demonstration:—Mr. A. de Prenderville: Anæsthetics.

WEDNESDAY (29th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—3 P.M. Mr. Dunn: Diseases of the Cornea and their Treatment.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. J. Smith: Clinique. (Surgical.) 5.15 P.M. Mr. W. E. Miles: Rectal Diseases.

THURSDAY (30th).—ROYAL COLLEGE OF PHYSICIANS OF LONDON (Pall Mall East).—5 P.M. Dr. W. H. Allchin: Some Aspects of Malnutrition. (Lumleian Lecture.)

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Mr. Baldwin: Practical Surgery.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. Hutchinson: Clinique. (Surgical.) 5.15 P.M. Dr. D. Grant: Some Important Types of Deafness.

MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST (7, Fitzroy-square, W.).—5 P.M. Lecture:—Mr. H. Scharlieb: The Administration of Chloroform. (Post-Graduate Course.)

THE HOSPITAL FOR SICK CHILDREN (Gt. Ormond-street, W.C.).—4 P.M. Lecture:—Mr. Collier: Some Diseases of the Urinary Organs.

FRIDAY (31st).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.). 5 P.M. Dr. Abraham: Cases of Skin Disease.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. S. Stephenson: Clinique. (Eye.)

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—4.30 P.M. Lecture-Demonstration:—Mr. A. de Prenderville: Anæsthetics.

EDITORIAL NOTICES.

It is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index to Vol. II. of 1904, which was completed with the issue of Dec. 31st, and the Title-page to the Volume, were given in THE LANCET of Jan. 7th.

VOLUMES AND CASES.

VOLUMES for the second half of the year 1904 are now ready. Bound in cloth, gilt lettered, price 18*s.*, carriage extra.

Cases for binding the half year's numbers are also ready. Cloth, gilt lettered, price 2*s.*, by post 2*s.* 3*d.*

To be obtained on application to the Manager, accompanied by remittance.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

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The rates of subscriptions, post free, either from THE LANCET Offices or from Agents, are:—

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Subscriptions (which may commence at any time) are payable in advance. Cheques and Post Office Orders (crossed "London and Westminster Bank, Westminster Branch") should be made payable to the Manager, MR. CHARLES GOOD, THE LANCET Offices, 423, Strand, London, W.C.

SUBSCRIBERS ABROAD ARE PARTICULARLY REQUESTED TO NOTICE THE RATES OF SUBSCRIPTIONS GIVEN ABOVE. It has come to the knowledge of the Manager that in some cases higher rates are being charged, on the plea that the heavy weight of THE LANCET necessitates additional postage above the ordinary rate allowed for in the terms of subscriptions. Any demand for increased rates, on this or on any other ground, should be resisted. The Proprietors of THE LANCET have for many years paid, and continue to pay, the whole of the heavy cost of postage on overweight foreign issues; and Agents are authorised to collect, and do so collect, from the Proprietors the cost of such extra postage.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied. Address—THE MANAGER, THE LANCET OFFICES, 423, STRAND, LONDON, ENGLAND.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Mar. 23rd, 1905.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind	Rainfall.	Solar Radiation in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb	Dry Bulb.	Remarks at 8.30 a.m.
Mar. 17	29·55	S.W.	0·03	87	54	44	45	47	Fine
,, 18	29·62	S.W.	0·62	70	57	47	48	49	Raining
,, 19	29·93	W.	...	98	57	42	43	45	Fine
,, 20	29·98	E.	...	95	56	41	42	44	Cloudy
,, 21	29·75	E.	...	76	56	44	43	46	Overcast
,, 22	29·66	E.	...	94	62	41	43	44	Foggy
,, 23	29·76	S.	...	72	58	44	49	50	Fine

During the week marked copies of the following newspapers have been received:—*Westminster Gazette, Pall Mal Gazette, Irish Times, Western Daily Press, Surrey Advertiser, Reading Mercury, Literary Digest (New York), Scientific American, Mining Journal, Daily News, Australasian Medical Gazette, Daily Chronicle, Western Mail (Cardiff), Plymouth Mercury, Freeman's Journal, Herefordshire Mercury, Windsor and Eton Express, Psycho-therapeutic Journal, Belfast Whig, Halifax Courier, Echo, &c.*

Communications, Letters, &c., have been received from—

A.—Dr. S. B. Atkinson, Lond.; Dr. A. W. Addinsell, Lond.; Mr. S. Appleton, Lond.; Messrs. Arnold and Sons, Lond.; Messrs. W. Aldridge and Co., Birmingham; Dr. B. Anningson, Cambridge; Messrs. Adlard and Son, Lond.; Mr. C. E. Abbott, Roche.

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